SIEMENS

DIGISCAN M

SP

System Manual

Start-up

Acquisition workstation, image reader, viewing station

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Please contact your local Siemens office to order current revision levels.

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Page

1 Introduction 1 - 1

Safety information . . . 1 - 1
General remarks . . . 1 - 1
Laser safety . . . 1 - 1
Documents required . . . 1 - 1
Tools, meters and appliances required . . . 1 - 2
General remarks . . . 1 - 2
Prerequisites . . . 1 - 3
MAMMOMAT . . . 1 - 3
DIGISCAN M . . . 1 - 3
Hardcopy camera . . . 1 - 3
Important notes on start-up . . . 1 - 4
General remarks . . . 1 - 4
Network configuration . . . 1 - 4
Shipment . . . 1 - 4
Software . . . 1 - 4
Start-up sequence . . . 1 - 5
Abbreviations . . . 1 - 7

2 Start-up of the acquisition workstation 2 - 1

General remark . . . 2 - 1
Start-up procedure . . . 2 - 1
Install service images . . . 2 - 1
Labeling . . . 2 - 2
Configuration of the barcode scanner . . . 2 - 3

3 Installation and start-up of the image reader 3 - 1

Installation and start-up . . . 3 - 1
Starting the M-Utility (three scenarios) . . . 3 - 1
Starting the M-Utility from the routine process mode (routine mode) . . . 3 - 1
Starting the M-Utility from the initialization process mode . . . 3 - 2
Starting the M-Utility from the abnormality process mode . . . 3 - 3
Exiting M-Utility . . . 3 - 3
DICOM installation . . . 3 - 3
Setting the configuration . . . 3 - 4
Backup . . . 3 - 8
Check HOSTS file . . . 3 - 9

4 Start-up of the viewing station (option) 4 - 1

MagicView 1000 . . . 4 - 1
Start-up procedure . . . 4 - 1
Software configuration . . . 4 - 1
MammoReportPlus . . . 4 - 1
Start-up procedure . . . 4 - 1

Page

5 Start-up of the hardcopy camera 5 - 1

Hardcopy camera requirements . . . 5 - 1
Recommended hardcopy cameras . . . 5 - 1

6 Function check 6 - 1

Switch on the system . . . 6 - 1
Function check of the acquisition workstation . . . 6 - 1
Image transfer . . . 6 - 1
Filming (option) . . . 6 - 2
Function check of the viewing station (option) . . . 6 - 4
MagicView 1000 . . . 6 - 4
MammoReportPlus . . . 6 - 4

7 AEC settings 7 - 1

General . . . 7 - 1
Definitions . . . 7 - 2
Protective measures . . . 7 - 3
Symbols . . . 7 - 3
Delay times between two exposures . . . 7 - 3
Preparation . . . 7 - 4
Backup of existing system . . . 7 - 6
Definitions . . . 7 - 8
Object table group . . . 7 - 8
General conditions . . . 7 - 8
Calibration conditions . . . 7 - 8
Reference IP cassette . . . 7 - 8
Mains voltage . . . 7 - 8
Sensitivity conditions . . . 7 - 8
Overview of work routine . . . 7 - 9
DLF switch off . . . 7 - 10
Cassette loaded . . . 7 - 10
Increase grid speed . . . 7 - 10
AEC Correction tables . . . 7 - 11
Installation of AEC correction tables . . . 7 - 11
Calibrate correction tables . . . 7 - 13
Recalibration of an object table . . . 7 - 20
Sensitivity correction (fine setting) . . . 7 - 21
Sensitivity . . . 7 - 25
Testing the AEC-function . . . 7 - 26
AEC performance test . . . 7 - 26
Reinstall/Install program parameters for OPDOSE . . . 7 - 27
Factory settings . . . 7 - 28
Testing OPDOSE . . . 7 - 29
Final procedures . . . 7 - 31

Page

8 Image quality 8 - 1

Image quality test procedure . . . . . 8 - 1

9 Final work steps 9 - 1

Safety measurements . . . . . 9 - 1
Components which can be detached from the mains cable . . . . . 9 - 1
Components which can not be detached from the mains cable . . . . . 9 - 1
Remaining work steps . . . . . 9 - 1
Completing the protocol . . . . . 9 - 1

10 Turning the system over to the customer 10 - 1

11 Start-up protocol 11 - 1

Backup of existing system . . . . . 11 - 1
AEC performance test . . . . . 11 - 2
Wing 1 M3000, Wing 2 M1000 . . . . . 11 - 2
Wing 2 M3000 . . . . . 11 - 3
OPDOSE settings . . . . . 11 - 4
Final checks . . . . . 11 - 5

12 Changes to previous version 12 - 1

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Safety information

General remarks

- The product-specific safety information contained in this document, as well as the general safety information must be observed.
- The general ESD guidelines must be observed.

Laser safety

- When working on an open laser, the leather gloves and laser safety glasses must be worn.
- No reflective tools must be used.
- See also “Safety and Radiation Protection Guidelines” ARTD 2.

Documents required

- DIGISCAN M Software acquisition workstation, SPB7-420.816.01...
- DIGISCAN M Software MagicView1000 configuration for mammography, SPB7-420.816.02...
- DIGISCAN M Quality Control Manual, SPB7-420.210.01...
- DIGISCAN M Instructions for use, SPB7-420.201.01...
- MagicView 1000 Installation and Start-up, P02-021.814...
- MammoReport^{Plus} Installation and Start-up Instructions, SPB7-420.814.01...
- DIGISCAN M Hardcopy Camera Information, SPB7...
- Fuji Service Manual FCR 5000MA plus, 009-058...
- Product-accompanying documentation

Tools, meters and appliances required

General remarks

The recommended equipment meets the specifications and are suitable for the measurements and checks listed. If other equipment is used, make sure that they also meet the specifications and are suitable for the listed measurements and checks.
If in doubt, contact CS Headquarters Support Center +49-9191-18 8080

The required adjustment and calibration intervals must be maintained.

Before any measurement or test equipment is used, it must first be subjected to a visual check. Damaged measurement or test equipment which can influence the accuracy of the test results may not be used.

NOTE

All tools, meters and appliances with the exception of those marked "*", are listed along with their specifications in the STC (Service Tools Catalogue).

- Standard tool kit
- Protective ground wire tester
- Digital multimeter
- ESD equipment
- Gloves of cotton
- Cleaning agent*
- AEC calibration plexi
  - Three plates, "2" cm (material No. 65 61 232)
  - One plate, "1" cm (material No. 65 61 224)

NOTE

Tools, meters and appliances required for the image quality tests are listed with the tests in the DIGISCAN M Quality Control Manual, SPB7-420.210.01... .

Prerequisites

MAMMOMAT

1. For all MAMMOMAT 3000 Nova, upgrade with isolation kit No. 63 96 704.
2. For MAMMOMAT 3000 Nova with serial No. lower than 6850, upgrade with extended radiation field kit No. 64 83 551.
3. For MAMMOMAT 3000 Nova with serial No. lower than 7000, upgrade with AEC kit No. 65 52 819. If the AEC kit is installed directly before the prom kit No. 66 24 410, use proms from the prom kit if those are of higher version than the AEC proms.

   Prerequisites (installation kit no. 65 52 819):
   Depending on the serial number and/or version of the software of your MAMMOMAT, complementary measures may have to be taken. These measures are described below.
   - For MAMMOMAT 3000 with serial number lower than 2056:
   If not done previously; change the polarity of the stereo lever switch.
   - For MAMMOMAT 3000 with serial number lower than 3242:
   Make sure that the article no. of the PC board D702 is 64 21 288.
   - For MAMMOMAT 3000 software version lower than v1.5:
   Replace HSE detectors. The part no. of the HSE detectors must be 38 47 626.
   - For MAMMOMAT 3000 software version lower than v2.2:
   Calibrate the swivel-arm rotation.

NOTICE

The tables for Fuji CR HR-BD imaging plate in IP CASS-BD M will be installed on D and will overwrite existing tables.

Make sure that the correction tables for the film/screen combination are installed on H.

If more than one film/screen combination has been installed, one of them has to be removed.

4. For all MAMMOMAT 3000 Nova with serial No. lower than 9300, upgrade with prom kit No. 66 24 410.

DIGISCAN M

The DIGISCAN M system must have been installed according to DIGISCAN M Installation Instructions, SPB7-420.812.01... .

Hardcopy camera

If a hardcopy camera is configured, an appointment must have been scheduled with the responsible employee from the camera manufacturer. The employee should be present at startup - approximately 2 days after beginning of the installation through the sub contractor.

This employee will have the following tasks:

- Connecting the hardcopy camera to the network.
- Setting the hardcopy camera input to a linear LUT and optical density to max.
- Checking image transfer together with the Siemens employee.

- Measuring the optical density values of the ten gray steps of the SMPTE test pattern together with the Siemens employee.
- Performing any adaptations on the hardcopy camera so that the reference values (optical density) of the SMPTE test pattern can be achieved.

Important notes on start-up

General remarks

The system documentation is no longer available on paper. The documents are now published via CD-ROM or CB-DOC (intranet). The exceptions are Installation Instructions, Start-up, Software, Wiring Diagrams and Disposal Instructions that are delivered on paper also.

The CD-ROM will be distributed only to the persons who have attended the required training course and is therefore not available at the site!

The spare parts list found on the CD-ROM in the Fuji manual is the original Fuji list with Fuji material numbers only. All available Siemens material numbers are listed on the LINKONE CD-ROM spare parts catalog.

Network configuration

NOTE	**If there is no network and if the DIGISCAN M system is operated as a “stand-alone” network, configuration of the network can be skipped.**

If the system is integrated into an existing network, the records regarding “update” must be adapted to the local conditions (hospital name, type of hardcopy camera).

It is also recommended that when the system is initially integrated into the network, the standard system first be put into operation in accordance with the instructions in this document and its function checked.
Afterwards, the system can be integrated into the existing network by adapting the network configuration.

NOTE	**This document describes a DIGISCAN M standard system and presumes that the Siemens employee has completed the training according to the Field Service Strategy.**

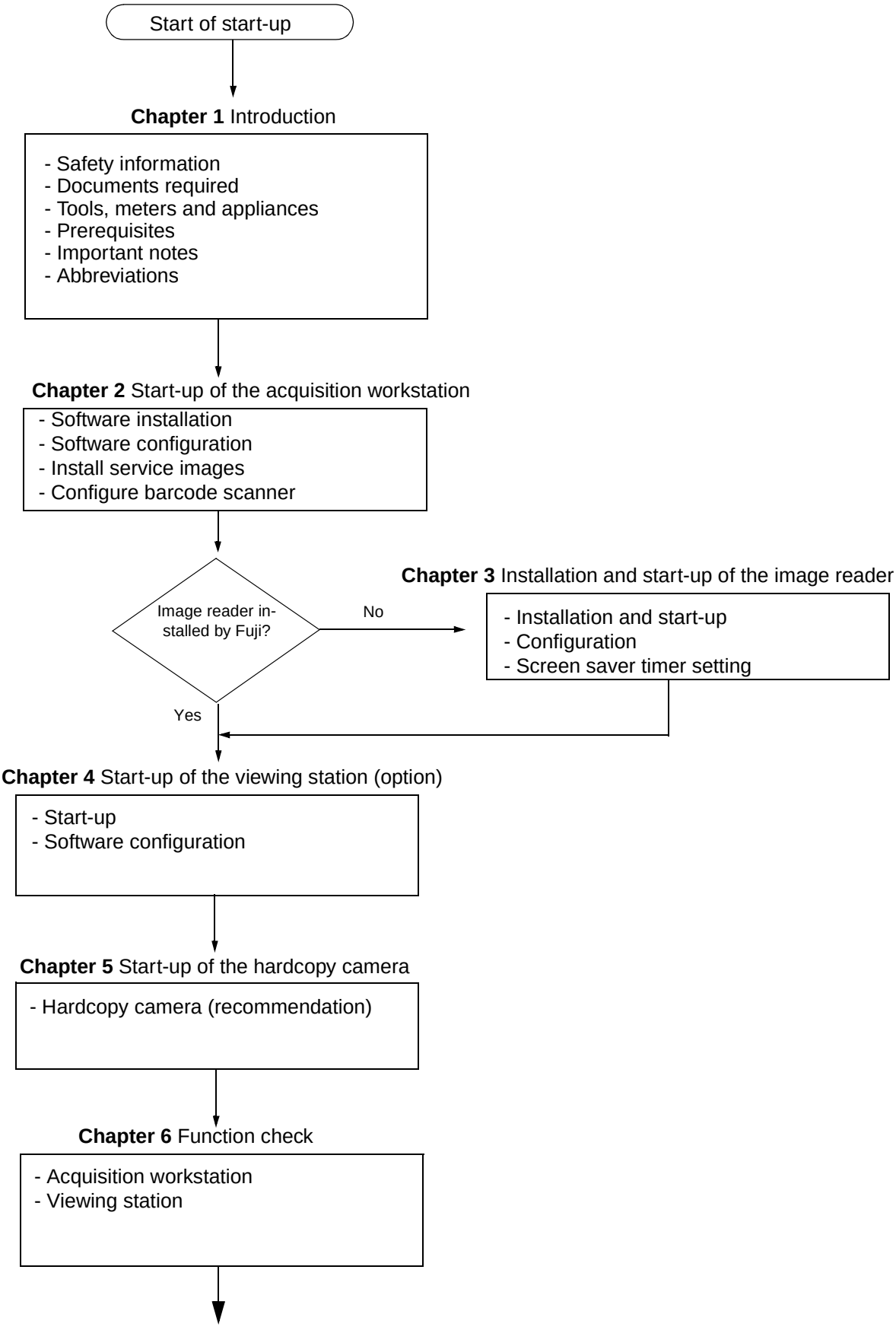
Shipment

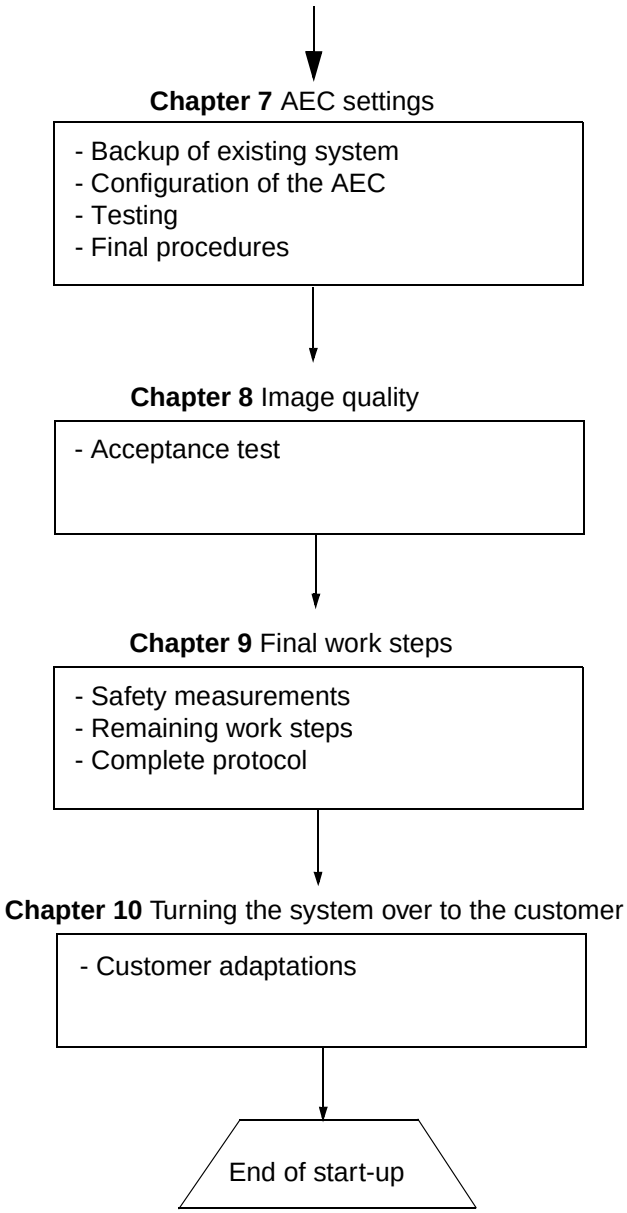
The parts of the DIGISCAN M system are adjusted, tested, documented and shipped separately.

Software

- The acquisition workstation is not shipped with the software pre installed.
- For viewing station (option), see product-accompanying documentation.

Start-up sequence




Chapter 7 AEC settings
- Backup of existing system
- Configuration of the AEC
- Testing
- Final procedures
Chapter 8 Image quality
- Acceptance test
Chapter 9 Final work steps
- Safety measurements
- Remaining work steps
- Complete protocol
Chapter 10 Turning the system over to the customer
- Customer adaptations
End of start-up

Abbreviations

AWS	Acquisition Workstation
ASCRx	Acquisition workstation software based on *syngo*® (x is product version)
FCR	Fuji Computer Radiography
IVK	Installed Volume Component
IP	Imaging Plate
IQ	Image Quality
LUT	Lookup Table
MOD	Magneto Optical Disc
FCR 5000MA plus	Fuji designation for the image reader
SCSI	Small Computer System Interface

syngo is a registered trademark of Siemens AG.

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General remark

The DIGISCAN M system components must have been installed according to DIGISCAN M Installation Instructions, SPB7-420.812.01... .

Start-up procedure

Install and configure the software according to DIGISCAN M Software acquisition workstation, SPB7-420.816.01... .

Install service images

Install the service images shall be used during image quality tests.

- System ON.
- Log in as meduser.
- Press the keyboard button to switch to Windows.
- Select **Start > Programs > Accessories > Windows Explorer**.
- Insert the ASCRx software CD-ROM in the CD-RW drive.
- Open the folder Service_Images on the CD-ROM.
- Copy all six images to C:\temp.
- Close the Windows Explorer.
- Activate the **Viewing** task card.
- Call up **Transfer > Import from Off-line...**.
- Select C:\temp.
- Select all six “Service_Images.RF”.
- Press **OK**.
- Call up **Patient > Browser** and check that service_images are imported.

Labeling

Attach software version label (ASCRx), which is packed with the ASCRx software in the installation package, and system label (DIGISCAN M), which is packed together with gray plastic cards in the installation package, to two different gray plastic cards. Fasten the cards on the acquisition workstation with cable ties according to Fig. 1. Attach the acquisition workstation label (ACQUISITION WORKSTATION), which is incl. in the acquisition workstation package, in the same way.

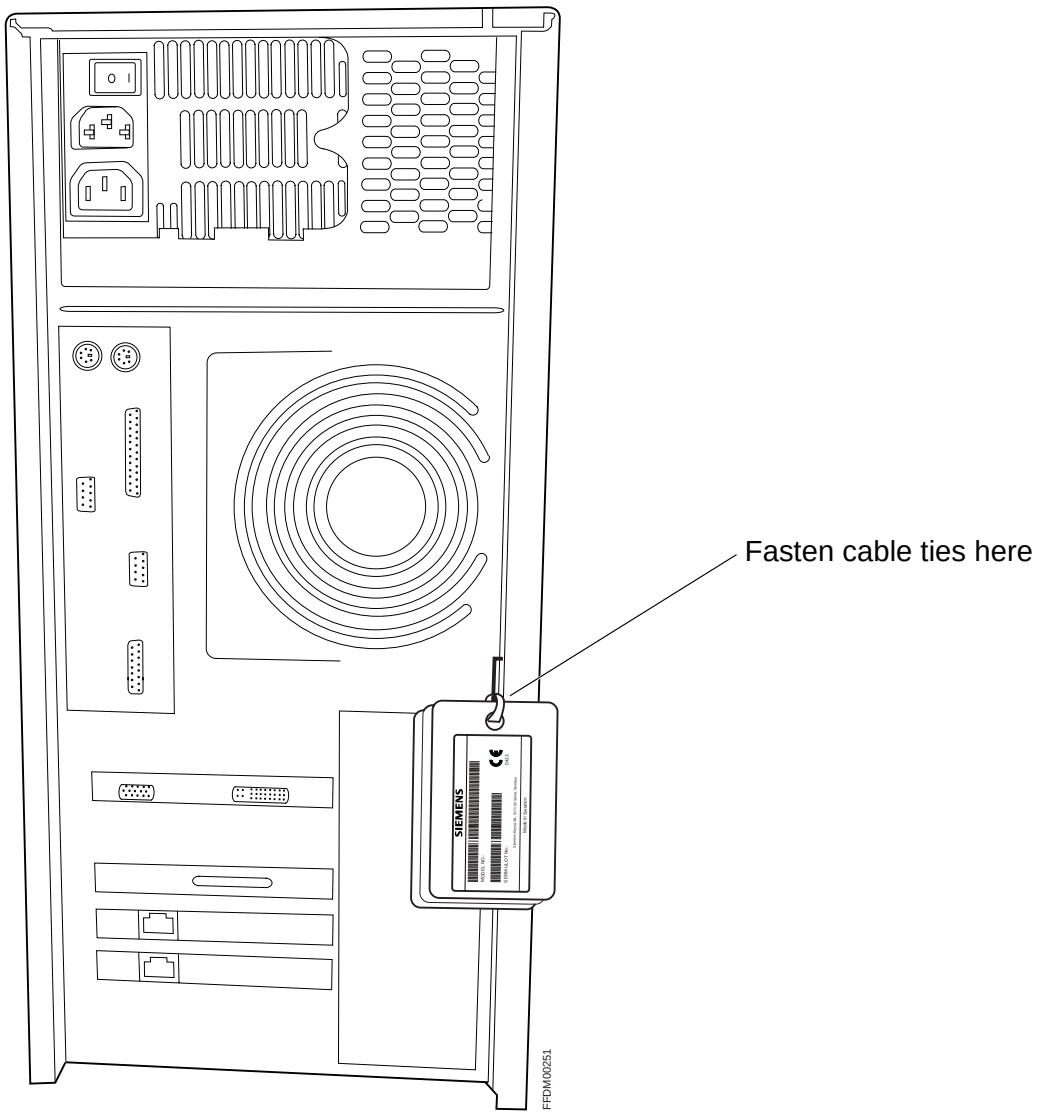

Fig. 1

Configuration of the barcode scanner

Sound at acquisition workstation start-up

Beeper	Meaning
L L L L	Parameters loaded correctly
H H H H long tones	Parameter loading error, reading or writing error in the non volatile memory

Sound during barcode scanner configuration

Beeper	Meaning
H H H H	Correct entry or exit from configuration mode
L	Good read of a command
L L L	Command read error

Sound during a normal read

Beeper	Meaning
L	Correct read of a code in normal mode

H= high tone

L= low tone

- Switch the acquisition workstation ON.
- Read the barcodes below to configure the barcode scanner. Confirm by listening to the sound.

NOTE **If problem occur during barcode scanner configuration, restart with “Exit and save” and then “Restore default”.**

		Scanner sound	Decoder sound
1.	Restore default	HHHH HHHH	
2.	RS232	HHHH HHHH	
3.	Enter configuration (for scanner)	HHHH	
4.	Disable all code families	L	
5.	Codabar with no start stop character equality check	L	
6.	No transmission of start and stop characters	L	
7.	Increased decoding safety by forcing the scanner to decode the barcode three times before accepting the barcode	L	

	Scanner sound	Decoder sound
8. Active level	L	
9. Hardware trigger	L	
10. Exit and save (scanner settings)	L HHHH	

- Configuration complete.

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Installation and start-up

Install and start-up the image reader according to the table below:

Installation procedure	Fuji Service Manual FCR 5000MA plus, 009.058... chapter Installation	DIGISCAN M Start-up (this document)
1.	Chapter 1 - 20	
2.		"DICOM installation" on Page 3 - 3.
3.		"Setting the configuration" on Page 3 - 4
4.		"Backup" on Page 3 - 8
5.	Chapter 23 - 27	

⚠CAUTION

The light-collecting guide assemblies are easily damaged.

Handle the light-collecting guide assemblies with extreme care and use the gloves of cotton.

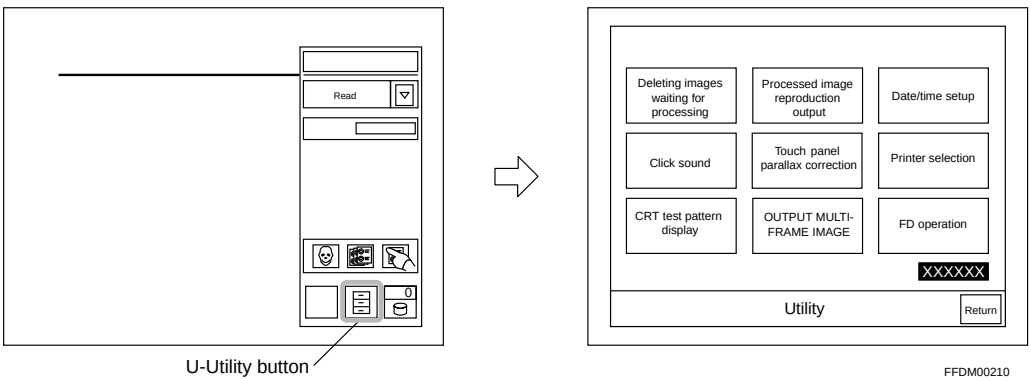
Starting the M-Utility (three scenarios)

NOTE

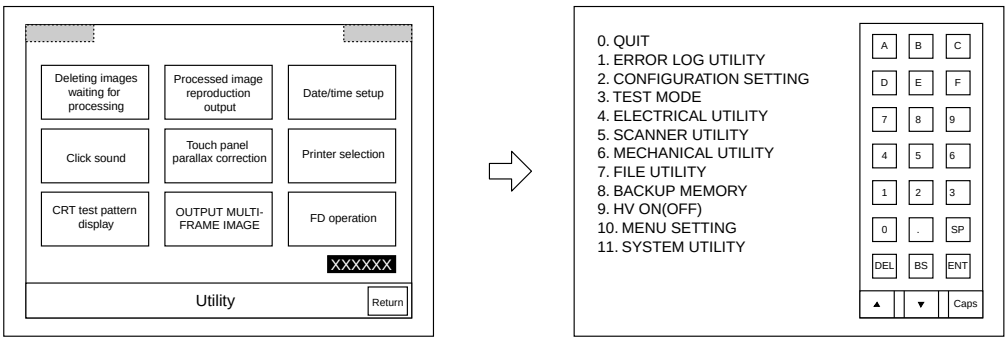
Instructions how to start the M-Utility is given below. Follow this procedure when the installation and start-up instructions requires that the M-Utility is started.

Starting the M-Utility from the routine process mode (routine mode)

- Press the U-Utility button.



- Touch the upper left-hand corner of the touch panel, and then, within two seconds, touch the upper right-hand corner to start the M-Utility.



: Location to be touched

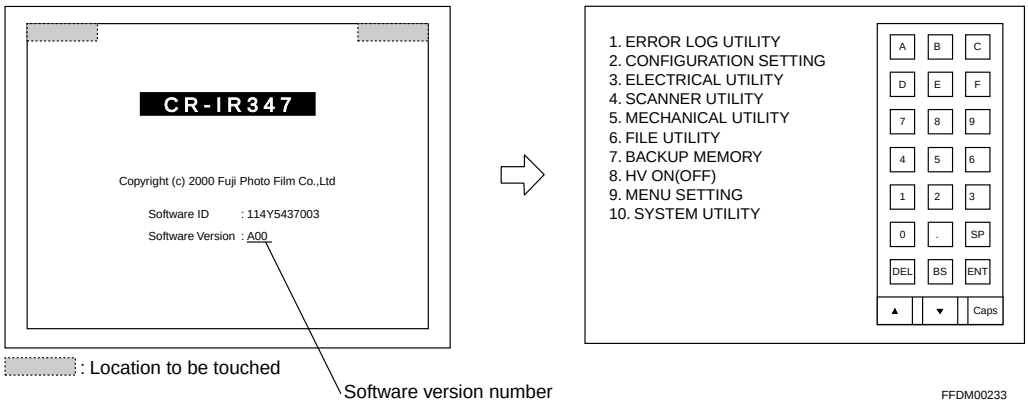
FFDM00211

Starting the M-Utility from the initialization process mode

After the machine is powered ON, the initialization screen appears, and subsequently a software version number is displayed for about five seconds. During that period of time, touch the upper left-hand corner of the operation panel, and then, within two seconds, the upper right-hand corner.

NOTE

After the display of the software version number ends, the operation panel does not respond at all even if you touch it. In such an instance, perform a reset and wait until the software version number appears on the screen, or enter the routine process mode and then start the M-Utility.


CR-IR347
Copyright (c) 2000 Fuji Photo Film Co.,Ltd
Software ID : 114Y5437003
Software Version : A00
1. ERROR LOG UTILITY
2. CONFIGURATION SETTING
3. ELECTRICAL UTILITY
4. SCANNER UTILITY
5. MECHANICAL UTILITY
6. FILE UTILITY
7. BACKUP MEMORY
8. HV ON(OFF)
9. MENU SETTING
10. SYSTEM UTILITY
A B C D E F 7 8 9 4 5 6 1 2 3 0 . SP DEL BS ENT ▲ ▼ Caps

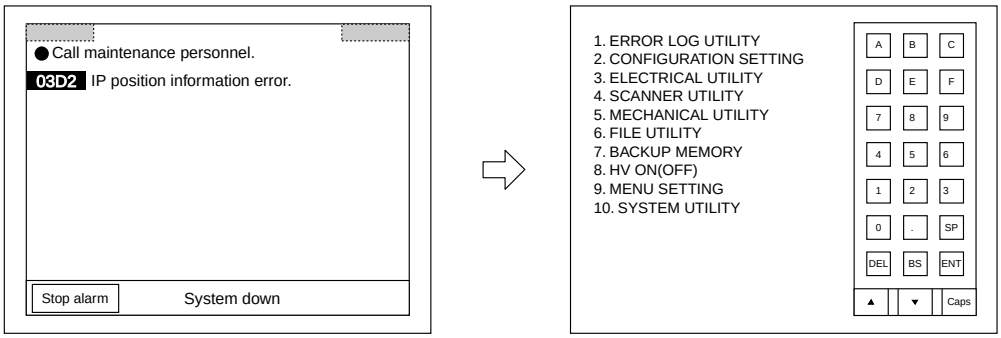
: Location to be touched

Software version number

FFDM00233

Starting the M-Utility from the abnormality process mode

Touch the upper left-hand corner of the operation panel, and then, within two seconds, touch the upper right-hand corner.



: Area to be touched

FFDM00234

Exiting M-Utility

NOTE

If M-Utility is entered during the initialization sequence, “0. QUIT” does not appear. Thus,

after quitting M-Utility, the machine should be reset.

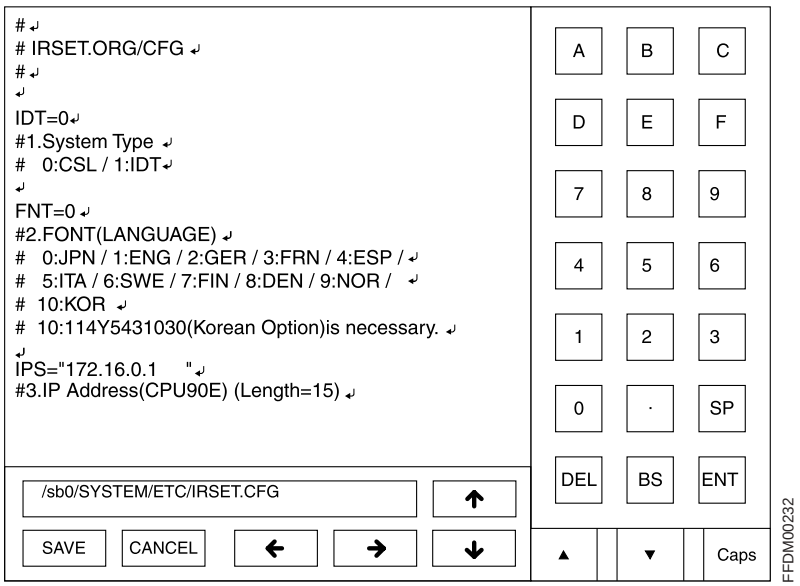
- While the M-Utility main menu is displayed, select **0. QUIT**.
- Press the reset button.

DICOM installation

- Start the M-Utility.
- Select **[7][ENT]** for FILE UTILITY.
- Put the DICOM for OEM floppy disk into the floppy disk drive.
- Select **[7][ENT]** for EXECUTION.
- Select **[2][ENT]** for INSTALL.
- Select **[1][ENT]** to accept that selected file is executed.
- When the installation is finished, touch **[0][ENT]**.
- Touch **[0][ENT]**.
- Touch **[QUIT]**.
- Remove the floppy disk from the floppy disk drive.
- Turn OFF the system power switch and back ON.
- Touch **[OK]** when the message appears:
  “The following settings have been added/deleted. Press OK key. “

Setting the configuration

- Start the M-Utility.
- Select **[2][ENT]** for CONFIGURATION SETTING.
- Select **[1][ENT]** for SYSTEM.
  To move the cursor, use the arrow keys or touch the screen.



- Set system type to IDT:

Old	New
IDT=0↵ #1.System Type↵	IDT=1↵ #1.System Type↵
#0:CSL / 1:IDT↵	#0:CSL / 1:IDT↵

- Set font (language) to match the syngo® installation:
  For english use the following settings:

Old	New
FNT=0↵ #2.FONT (LANGUAGE)↵	FNT=1↵ #2.FONT (LANGUAGE)↵

For german use the following settings:

Old	New
FNT=0↵ #2.FONT (LANGUAGE)↵	FNT=2↵ #2.FONT (LANGUAGE)↵

For french use the following settings:

Old	New
FNT=0↵ #2.FONT (LANGUAGE)↵	FNT=3↵ #2.FONT (LANGUAGE)↵

For spanish use the following settings:

Old	New
FNT=0↵ #2.FONT (LANGUAGE)↵	FNT=4↵ #2.FONT (LANGUAGE)↵

- Replace the IP address of the CPU90F board (Item No. 4):

Old	New
IPI=”172.16.0.2 “↵ #4.IPAddress(CPU90F)(Length=15)↵	IPI=”192.168.1.100 “↵ #4.IPAddress(CPU90F)(Length=15)↵

NOTE **Make sure that the length of the IP address is 15, i.e. IPI=”192.168.1.100xx” where x is empty space.**

- Change the screen saver setting time from 5 minutes to 1 minute (Item No. 14):

Old	New
SSI=5↵ #14. Screen Saver Timer↵ #0-60 [min]↵	SSI=1↵ #14. Screen Saver Timer↵ #0-60 [min]↵

- Enable the distribution code:

Old	New
ID_DST=0↵ #44. Distribution Code Setting↵ #0:DISABLE / 1:ENABLE↵	ID_DST=1↵ #44. Distribution Code Setting↵ #0:DISABLE / 1:ENABLE↵

- Touch **[SAVE]**.

- Select **[4][ENT]** for EQUIPMENT.
- Replace iip with AWS:

Old	New
IDT iip↵	IDT AWS↵

and type # in front of DISPLAY to disable that function.

- Touch **[SAVE]**.
- Select **[6][ENT]** for NETWORK HOST INTERFACE (DEVICE).
- Replace:

Old	New
iip:DISPLAY,0200,,,↵	AWS:DISPLAY,0200,,,2↵

- Touch **[SAVE]**.
- Select **[7][ENT]** for HOST ADRESSES (HOSTS).
- Replace:

Old	New
172.16.0.2 fcr5000-n↵	192.168.1.100 fcr5000-n↵
172.16.1.20 iip↵	192.168.1.1 AWS↵

- Touch **[SAVE]**.
- Select **[8][ENT]** for DISTRIBUTION (CODEDSTB).
- Add:

Old	New
#Code Host Name [HostName]...↵	#Code Host Name [HostName]...↵
	00000001 AWS↵

- Touch **[SAVE]**.
- Select **[10][ENT]** for NETMASKS (NETMASKS).
- Add:

Old	New
172.16.0.0 255.255.0.0↵	172.16.0.0 255.255.0.0↵
	192.168.1.0 255.255.255.0↵

- Touch **[SAVE]**.

- Select **[11][ENT]** for DICOM (Base on DICOM).
- Replace:

Old

```
fcr5000-n,STORAGE_U:DICOM_IR,,1,1,100,600,2↵
iip,STORAGE_P:DICOM_IIP,21760,1,1,100,600,2↵
```

New

```
fcr5000-n,STORAGE_U:DICOM_DPR,,2,0,100,600,2↵
AWS,STORAGE_P:DICOM_HIC,21760,2,0,100,600,2↵
```

NOTE	**Make sure that the settings are correct.**

- Touch **[SAVE]**.
- Touch **[0][ENT]**.
- Touch **[0][ENT]**.
- Touch **[QUIT]**.
- Turn OFF the system power switch and back ON.

Backup

- Start the M-Utility.
- Select **[7][ENT]** for FILE UTILITY.
- Select **[3][ENT]** for BACKUP.
- Select **1. SCANNER DATA**.

```
PLEASE SET A FD.
ARE YOU SURE TO COPY SCANNER DATA FILES TO THE FD ?
1.YES 2.NO (DEFAULT=2) :
```

FFDM00213

- Put the floppy disk into the floppy disk drive, and select **1**.

```
XXXXXXXXXX IS COPIED.
XXXXXXXXXX IS COPIED.
.
.
.
XXXXXXXXXX IS COPIED.
```

FFDM00214

XXXXXXXXXX: File name

<When the FD is full>

```
THE FD IS FULL. EXCHANGE OTHER ONE.
1.CONTINUE 2.CANCEL (DEFAULT=2) :
```

FFDM00215

Replace the floppy disk, and select **1**.

<When there is some file that cannot be written to the FD>

```
FILE I/O ERROR. (FILE=XXXXXXXXXX)
```

FFDM00216

XXXXXXXXXX: File name

- Repeat this backup procedure for:
  2. CONFIGURATION DATA
  3. NETWORK DATA
  4. IMAGE PROCESSING DATA
  5. CSL MENU DATA
  6. EDR PROCESSING DATA
- Touch **[0][ENT]**.
- Touch **[0][ENT]**.
- Touch **[QUIT]**.
- Proceed with Checking and deleting the error log during setup in Fuji Service Manual FCR 5000MA plus, 009.058... chapter Installation.

Check HOSTS file

- Press the keyboard button to call up the Windows **Start menu**.
- In the **Start menu** select **Programs > Accessories > Windows Explorer**.
- In **Windows Explorer** right click on the file **C:\WINNT\system32\drivers\etc\HOSTS** and choose **Open With...** from the menu.
- The **Open With** dialogue window opens. Choose **Notepad** from the list and click on the **OK** button.
- Check that the file contains the following line:

  192.168.1.100 fcr5000-n

- If not, add the line last in the file and choose **File > Save**.
- Close the file.

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MagicView 1000

Start-up procedure

Start-up the viewing station according to MagicView 1000 Installation and Start-up, P02-021.814... .

NOTICE	**The time zone must be set up according to the country of installation to avoid image transfer problems.** **Make sure that the date and time zone settings are correct.**

Software configuration

Install the mammography user account according to DIGISCAN M Software MagicView 1000 configuration for mammography, SPB7-420.816.02... .

NOTICE	**This can be done only by a PACS trained CSE!**

MammoReport^{Plus}

Start-up procedure

Start-up the viewing station according to MammoReport^{Plus} Installation and Start-up Instructions, SPB7-420.814.01... .

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Hardcopy camera requirements

Recommended hardcopy cameras

Hardcopy cameras released for the DIGISCAN M system are listed in the document DIGISCAN M Hardcopy Camera Information, SPB7....

NOTE	**Only these hardcopy cameras were tested and released. Other hardcopy cameras may create unexpected trouble!**

NOTE	**Requirements for optional hardcopy cameras:** **That it can receive DICOM print, has a resolution of 50x50 μm, density ≥3.5 and can print 18x24 and 24x30 film format.**

The hardcopy camera must be operational.

NOTE	**The input for the hardcopy camera must be set to linear and maximum density by the camera manufacturer's technician.**

NOTE	**The function of the hardcopy camera is tested in "Function check" on Page 6 - 1.**

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NOTE

The acquisition workstation must be properly entered in all corresponding modalities (viewing station etc.) prior to the network function check.
The required steps are described in the instructions for the corresponding modalities. All required information regarding this can be taken from the chapter "Data sheet and notes for connected stations" in DIGISCAN M Software acquisition workstation, SPB7-420.816.01... .

Switch on the system

- Switch on the image reader.
  - ➪ Booting takes approximately 5 minutes until the utility screen will be displayed.
- Switch on the MAMMOMAT 3000 Nova.
- Switch on the viewing station (option) and start the application.
- Switch on the hardcopy camera (recommendation).
- Switch on the acquisition workstation and login as meduser.
  - ➪ After approximately 30 seconds the Examination task card will be displayed.

Function check of the acquisition workstation

Image transfer

NOTE

For detailed information how to perform an examination, see DIGISCAN M Instructions for use, SPB7-420.201.01... .

- Activate the **Examination** task card at the acquisition workstation.
- Register a cassette according to DIGISCAN M Instructions for use, SPB7-420.201.01...
- Click on the **Patient Registration** button and register a patient with the following entries:
  Last name: enter the name "Function check".
  Date of Birth: enter the current date.
  Sex: select **Other**.
- Click on the **Exam** button to finish the registration.

- Slide the L-cc label on the object table into the beam path.
- Expose an 18x24 mm IP cassette in the MAMMOMAT 3000 Nova using a 4 cm plexi.
- Read barcode for exposed IP cassette.
- Read the projection view barcode **L-cc**.
- Read the IP cassette in the image reader.
- After approximately 100 seconds, the image should have arrived at the acquisition workstation.

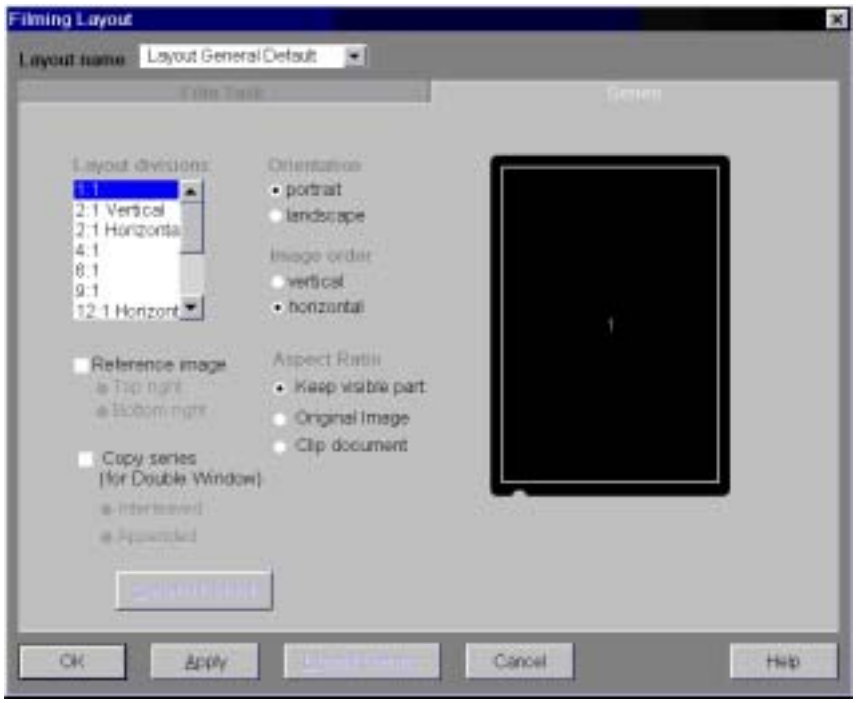
- Click on the **End of examination** button to exit the examination.
- Depending on the work routine of the hospital, ensure that the image is archived on the MOD and/or CD-R and/or sent to an archive system, and sent to a viewing station (option).

⚠WARNING	**Images can not be archived on MOD or CD-R or sent to an archive system from the MammoReport^{Plus} (option).** **Images will not be saved.** **Send acquired images both to an archive system and to the MammoReport^{Plus} from the acquisition workstation.**

- Following the above-listed procedure, expose and read out another image. Use the same patient data but slide the R-cc label into the beam path and read the projection view barcode **R-cc**.
- After the last image was displayed on the acquisition workstation, check in the **Patient Browser** that the two images have been filed in **one** folder.

Filming (option)

- Activate the **Viewing** task card.
- Call up **Options > Configuration... > Filming Layout**.
- Select the **Series** tab.



- Deselect **Reference image**.
- Under **Aspect Ratio** select **Keep visible part**.
- Press **Apply** and then **OK**.
- Select one of the images in the **Patient Browser**.

- Call up **Patient > Copy to Film Sheet** in the main menu or by using the symbol keypad.

- Switch to the **Filming** task card.
- In **Camera** tab, select Film Size **Inch 11x14**.
- In **Images** tab, select .
- Call up **Film > Expose Film Sheet**.
- Check that the image is exposed in normal size and without any deformation.
  Make sure that the two projection views displayed in the image are shown from the same side.

Function check of the viewing station (option)

MagicView 1000

Image transfer

- Open the “Function check” patient.
- Check that the two images are loaded and displayed correctly on the screens. Make sure that the two projection views displayed in the images are shown from the same side.
- Check that the text information about the patient and the study is displayed correctly in the images.
- If the images were not archived on MOD and/or CD-R and/or sent to archive system from the acquisition workstation, do it from the viewing station.
- Check that the images were archived and/or sent correctly.
- Remove the images from the viewing station.
- Import the images from MOD, CD-R or archive system.
- Check that the images are displayed correctly.

Filming (option)

- Click on the first image to select it.
- Select the **Quick print** function in the **Networking** menu.
- Check that the image is exposed in normal size and without any deformation. Make sure that the two projection views displayed in the image are shown from the same side.

MammoReport^{Plus}

Image transfer

- Make sure that the images also are sent from the acquisition workstation to an archive.
- Open the “Function check” patient.
- Select single tiling so that one image is shown on each screen.
- Check that the two images are loaded and displayed correctly on the screens. Make sure that the two projection views are displayed in the images.
- Check that the text information that is displayed in the images and in the patient list is correct.

Filming (option)

- Click on the **DICOM print** button.
- Click in the **Print left Monitor** check box.
- Press the **Print** button.
- Check that the images are printed out correctly.

General

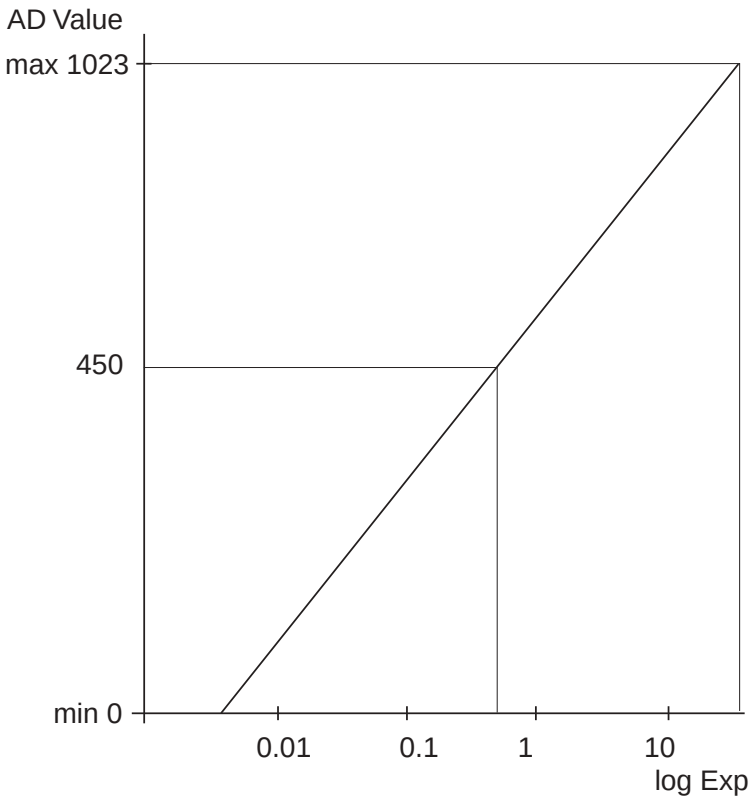
These instructions describe installation of AEC floppy disk with material No. 66 01 897. This floppy disk makes AEC tables for Fuji CR HR-BD imaging plate in IP CASS-BD M available.

The AEC is based on correction tables. The tables are optimized for the IP/cassette combinations in table 1.

Table 1				**Correction table identifications**		
Scanner	**IP**	**Cassette**	**Sensitivity**	**Mo/Mo**	**Mo/Rh**	**W/Rh**
DIGISCAN M	Fuji CR HR-BD	Fuji IP CASS-BD M	0	1401	1402	1403

Definitions

AD Value



Old backup floppy disk	Backup floppy disk to store data from before the installation. To be marked “Old backup” and with serial No. of system, date, and version of the correction tables.
New backup floppy disk	Backup floppy disk to store data during and after the installation. To be marked “New backup” and with serial No. of system, date, and version of the correction tables.

Protective measures

It is very important that any intervention in the equipment will start by disconnecting it from the power supply with the main circuit-breaker.

⚠WARNING

If the system is only switched off at the control panel or with S2/D711, line voltage will still be present at the generator line connection, line filter Z1, Z2, transformer T1, transformer T10 and PC board D711 (see MAMMOMAT 3000 Nova Wiring Diagram).

Life-threatening electric shock hazard exists.

Disconnect mains cable and comply with the information on this page.

⚠WARNING

After shut-down of the system, there may still be 380 V DC present on the intermediate circuit.

Life-threatening electric shock hazard exists.

The voltage level will be indicated by LED V24 on PC board D710. The voltage will drop to less than 30 V within about 3 minutes, the LED goes out at about 30 V.

Symbols

Checks and adjustments that must be performed with radiation ON are identified by the radiation warning symbol.

Delay times between two exposures

Delay times listed below must be followed in order to prevent the tube from overheating.

Exposure mAs value	Delay time between two exposures (seconds)
max 100	min 15
max 200	min 30
max 300	min 45
max 400	min 60
max 500	min 75

Preparation

1. System ON.
2. Login as meduser.
3. Open Windows Explorer.
4. Create a new folder under drive D: and name it “AEC_inst”.
5. Insert the service program floppy in drive A:.
6. Copy the files service.exe and m3000.h60 from A: to AEC_inst.
7. Insert the floppy AEC correction tables in drive A:.
8. Copy the AEC correction tables from A: to AEC_inst.
9. Mark an empty backup floppy with ***new backup***, serial number of system, version of the correction tables, and date. Insert the floppy in drive A.
10. Copy the content of AEC_inst to A:.
    Use this floppy for the rest of the installation.
11. If AEC correction tables have been installed on the MAMMOMAT before, make a backup of these tables, see "Backup of existing system" on Page 7 - 6.
12. Select **Options > Service > Local Service** in the window menu header.

13. Enter the service key (6 characters in 2nd mask).
14. Confirm the screen with **OK**. The Service Home menu appears.

15. Select **Quality Assurance**.

16. In **Source** select **AEC Calibration**.
17. In **AEC Calibration** select **Enable calibration mode**.
18. Select **Go** in the action bar.

19. Minimize the Quality Assurance window.
20. Press **Start** and select **Programs > Accessories > Command Prompt**.
21. In the DOS prompt, type:
    “A:” and press Enter,
    “service” and press Enter.
22. - In the log in-menu, enter your name and press Enter.
    - Type the password for the service program and press Enter.
    - In Program-mode set: **normal**.
23. Proceed with "Definitions" on Page 7 - 8.

Backup of existing system

1. Press **Start** and select **Programs > Accessories > Command Prompt**.
2. In the DOS prompt, type:
   “CD \” and press Enter,
   “MKDIR mammomat” and press Enter,
   “CD mammomat” and press Enter,
   “A:” and press Enter.
3. Make sure that the service floppy is still in drive A:.
4. Start the service program by writing: Service , then press Enter.
5. - In the log in-menu, enter your name and press Enter.
   - Type the password for the service program and press Enter.
   - In Program-mode set: **normal**.
6. Check that service program version 4.3 or higher is used. The version is shown in the top left corner of the display.
7. In **Mainmenu** select **Configuration > Power**. Note the displayed power values in the test protocol on Page 11 - 1.
8. Take the backup to hard disk: **Backup > Copy installation area to disk > All**.
9. Take out the floppy with the service program and insert an empty floppy disk and mark it with ***old backup***, serial number of system, version of the correction tables, and date. This floppy is defined as ***old backup floppy***.
10. In **Mainmenu** select **Configuration > Save config file**. Press F2 to save.
11. In **Mainmenu** select **Service > Copy error buffer to file**.
12. If the MAMMOMAT is equipped with OPDOSE, press the left program button on the panel. Note the displayed exposure settings in the test protocol on Page 11 - 1. Repeat for all four programs. Enter menu **Configuration > Miscellaneous > Auto limits**. Note the three values in test protocol on Page 11 - 1, in column “Breast thickness”.
13. Quit the service program by pressing F10.
14. Type “C:”.
15. Type “COPY *.TXT A:”.

16. Check that the following backup files are stored on the floppy disk (by typing “dir a:”, then pressing Enter):

    - a_backup.txt for AEC parameters
    - s_backup.txt for stand parameters
    - p_backup.txt for panel parameters
    - momo_h.txt for AEC correction tables
    - morh_h.txt for AEC correction tables
    - wrh_h.txt for AEC correction tables
    - momo_d.txt for AEC correction tables
    - morh_d.txt for AEC correction tables
    - wrh_d.txt for AEC correction tables
    - mammo.cfg for configuration parameters
    - errorbuf.txt for error log

17. Type “DEL *.TXT”.

18. Remove the floppy disk and make it write protected.

Definitions

Object table group

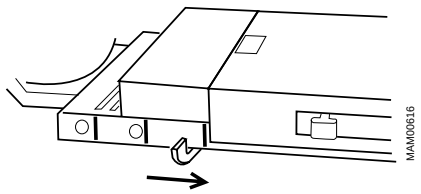
An object table group contains all object tables of the same type. There are four groups of object tables - Grid, No grid, Magnification and Stereo. For example the object table group Grid, consists of Grid 18x24 and Grid 24x30.

NOTE	**Stereo shall not be used together with DIGISCAN M.**

General conditions

When performing the settings in this chapter, there are some general conditions valid for all settings:

- The detector is to be in chest wall position.



- The AEC calibration plexi (material No. 65 61 224 and 65 61 232) must extend at least 10 mm beyond the chest wall edge of the table and be centered. Place the AEC calibration plexi in the same position for all exposures.

Calibration conditions

Compression plate must not be used during the calibration of correction tables. From the point sensitivity correction (fine setting) a compression plate may be used.

Reference IP cassette

Every DIGISCAN M system should have a reference IP cassette. Use this reference IP cassette where required and for the settings in this chapter. If there is no dedicated reference IP cassette, pick one IP cassette, mark it and use it for the settings in this chapter.

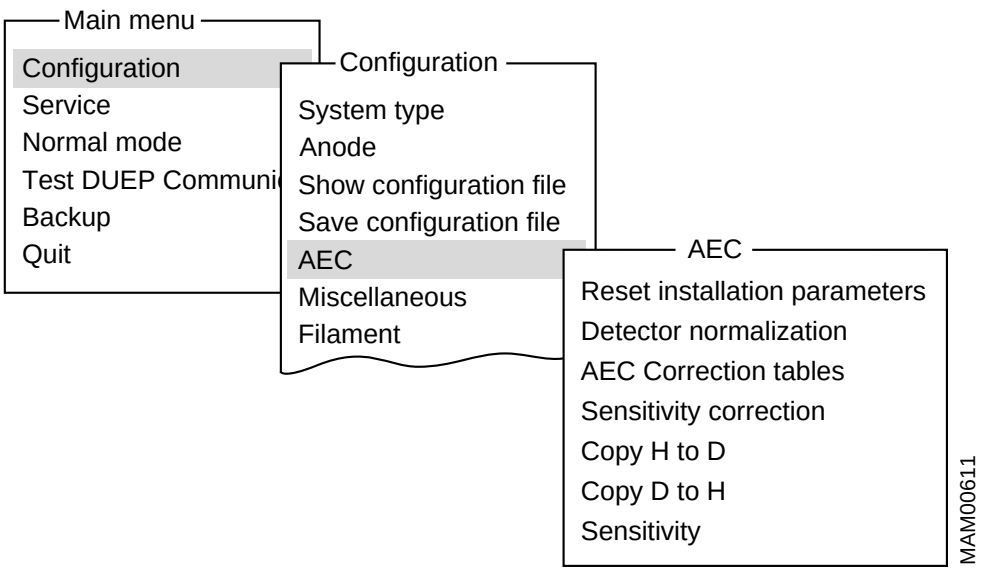
Mains voltage

Unless otherwise stated, the mains voltage and system must be ON and the service program running, before performing any setting in this chapter.

Sensitivity conditions

One step (1/8 E.P.) corresponds to approximately 4 AD Values.

Overview of work routine



1. "AEC Correction tables" on Page 7 - 11.
2. "Sensitivity correction (fine setting)" on Page 7 - 21.
3. "Sensitivity" on Page 7 - 25.

DLF switch off

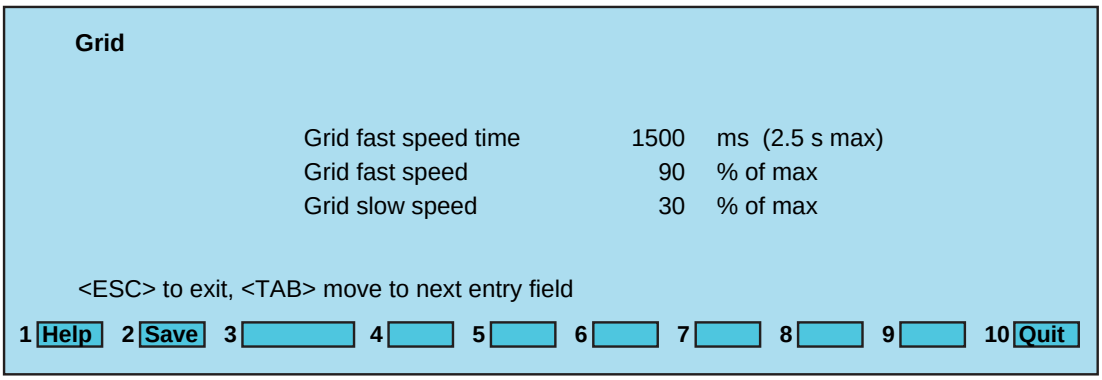
Deactivate the DLF switch. In **Main menu** select **Configuration > Miscellaneous > DLF switch**, press space to set switch to OFF. Press F2 to save.

Cassette loaded

In **Mainmenu** select **Configuration > Miscellaneous > Cassette loaded check**. Set to OFF during the whole installation.

Increase grid speed

Increase the grid speed. In **Main menu** select **Configuration > Grid speed**. Set the following values:


Grid
Grid fast speed time 1500 ms (2.5 s max)
Grid fast speed 90 % of max
Grid slow speed 30 % of max
<ESC> to exit, <TAB> move to next entry field
1 Help 2 Save 3 4 5 6 7 8 9 10 Quit

MAM00761

AEC Correction tables

This section will guide you through the following steps:

- Installation of correction tables (F2).
- Calibration of correction tables (F3), including rough setting of sensitivity correction.

The AEC uses one correction table for each Anode/Filter/Speed combination. Each correction table has separate corrections for each object table group (Magnification, Grid and No grid).

Installation of AEC correction tables

1. In **Mainmenu** select **Configuration > AEC > AEC correction tables**.
   The dashes in the ID column show that no correction table is installed (Fig. 1).

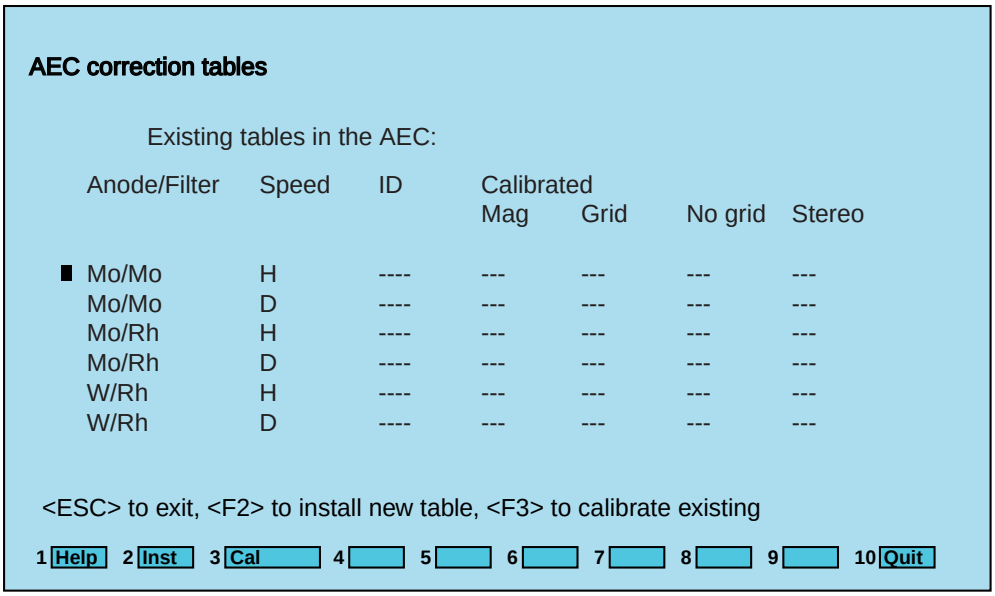
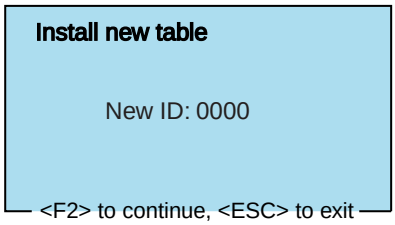

AEC correction tables
Existing tables in the AEC:
Anode/Filter Speed ID Calibrated Mag Grid No grid Stereo
Mo/Mo H ---- --- --- --- ---
Mo/Mo D ---- --- --- --- ---
Mo/Rh H ---- --- --- --- ---
Mo/Rh D ---- --- --- --- ---
W/Rh H ---- --- --- --- ---
W/Rh D ---- --- --- --- ---
<ESC> to exit, <F2> to install new table, <F3> to calibrate existing
1 Help 2 Inst 3 Cal 4 5 6 7 8 9 10 Quit
MAM00599

Fig. 1 AEC correction tables

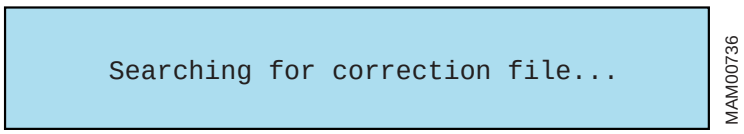
NOTE	**Install the correction tables on D only!**

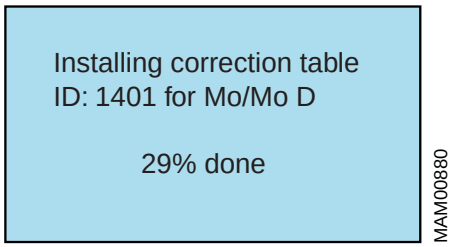
2. Make sure that the ***new backup floppy*** is inserted.
3. Decide for which combination you need to install correction table. (For available identifications for correction tables see Table 1, Page 7 - 1 or the new backup floppy.)

4. Place the cursor by one of the desired Anode/Filter/Speed combinations. Press F2.



5. Type the ID number of the new correction table (see Table 1, Page 7 - 1) in the dialog which appears. Press F2 to install the table. A message box will appear before the correction file has been found.





6. When the transaction of tables is finished, a dialog like Fig. 2, Page 7 - 14 will appear. To complete the calibration, proceed from step 5 of that section.

NOTICE

In order to resume calibrating after having quit the program:

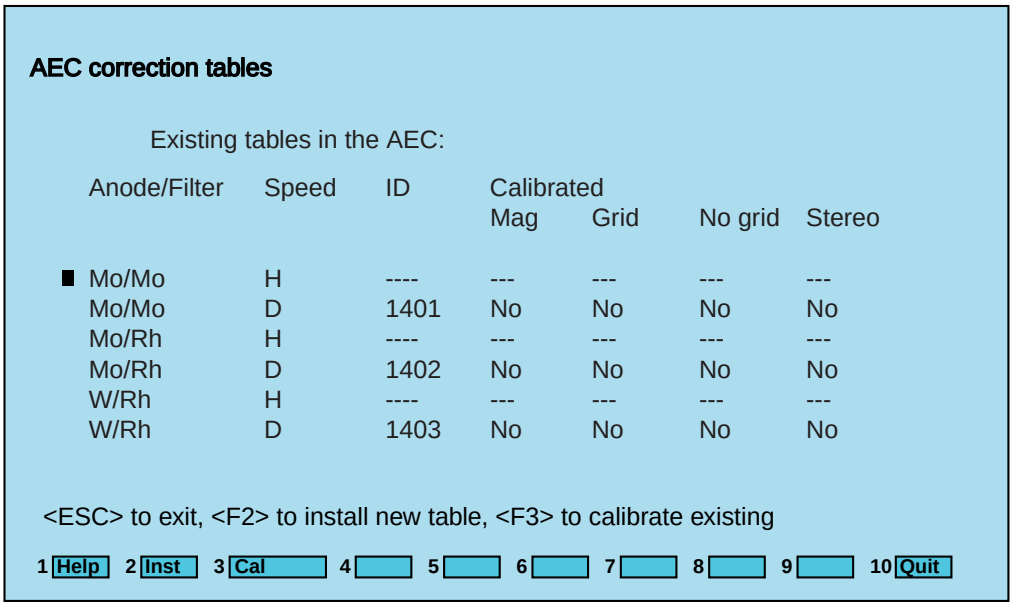
Follow the instructions from step 1 under "Calibrate correction tables" on Page 7 - 13.

Calibrate correction tables

NOTE	**The new backup floppy must be inserted.**

The Anode/Filter/Speed combinations should be calibrated one at a time.

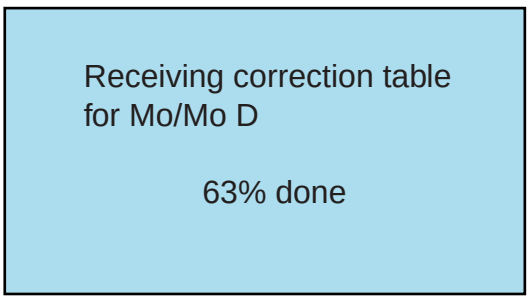
1. In **Mainmenu** select **Configuration > AEC > AEC correction tables**.


AEC correction tables
Existing tables in the AEC:
Anode/Filter Speed ID Calibrated Mag Grid No grid Stereo
Mo/Mo H ---- --- --- --- ---
Mo/Mo D 1401 No No No No
Mo/Rh H ---- --- --- --- ---
Mo/Rh D 1402 No No No No
W/Rh H ---- --- --- --- ---
W/Rh D 1403 No No No No
<ESC> to exit, <F2> to install new table, <F3> to calibrate existing
1 Help 2 Inst 3 Cal 4 5 6 7 8 9 10 Quit

MAM00881

NOTICE	**All object table groups and Anode/ Filter combinations available at the site must be calibrated prior to release for clinical use.**

2. Place the marker by one of the desired Anode/Filter/Speed combinations. Press F3 to transfer the table.
3. This message box is displayed while the service program receives the correction table.



MAM00882

4. When the transfer is done, the dialog *Calibration AEC correction table* appears.

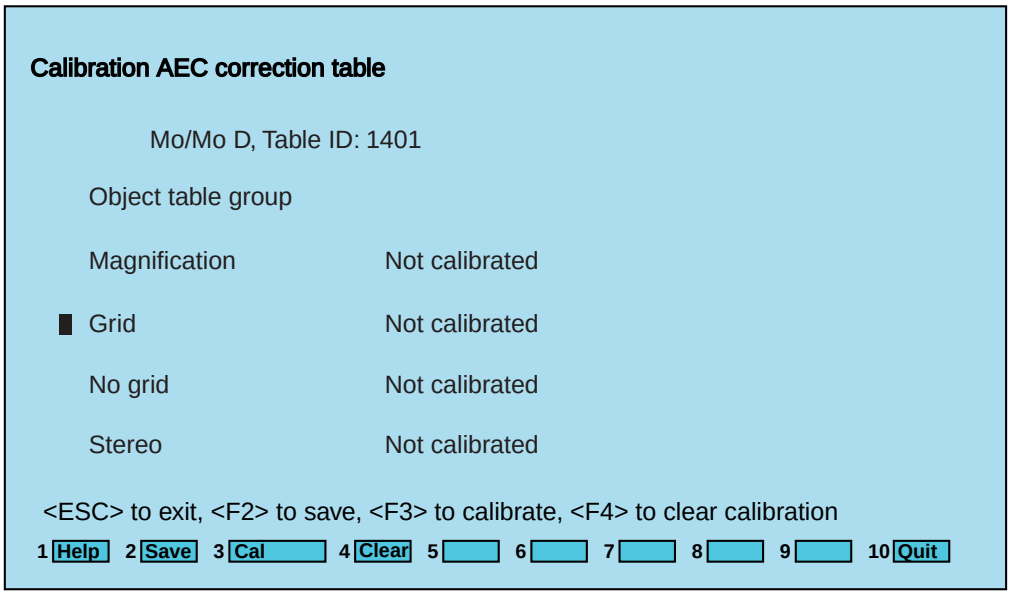
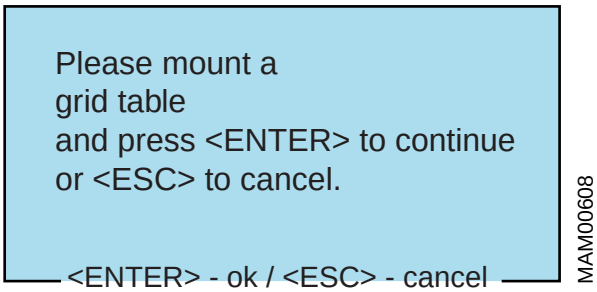

Calibration AEC correction table
Mo/Mo D, Table ID: 1401
Object table group
Magnification Not calibrated
Grid Not calibrated
No grid Not calibrated
Stereo Not calibrated
<ESC> to exit, <F2> to save, <F3> to calibrate, <F4> to clear calibration
1 Help 2 Save 3 Cal 4 Clear 5 6 7 8 9 10 Quit
MAM00883

Fig. 2 Dialog *Calibration AEC correction table* shows which object tables, in the current Anode/Filter/Speed combination, have been calibrated.

5. To calibrate the correction table for an object table group, place the cursor in front of the group. Press F3.



NOTE **Calibration of correction tables for Stereo is not included in DIGISCAN M.**

6. Follow the instructions in the message box above and press Enter.

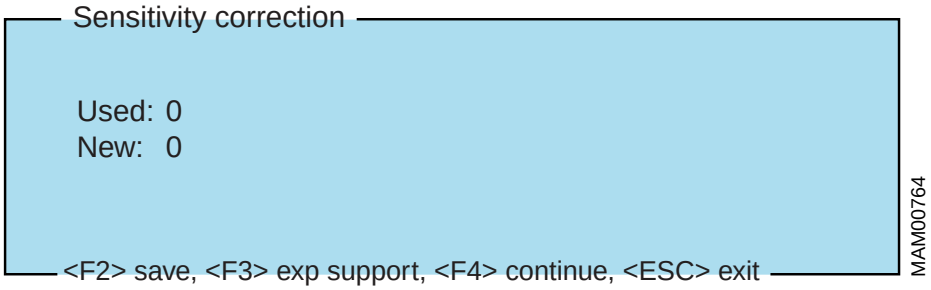


Fig. 3 Dialog *Sensitivity correction*

7. Before calibrating the installed correction tables, it is necessary to make a rough setting of the sensitivity correction for the chosen object table group.
8. Press the keyboard button to switch to the **Examination** task card. If the Quality Assurance window is maximized, minimize it.
9. Click on the **Patient Registration** button and register a patient with the following entries:
   Last name: enter the name “AEC patient”.
   Date of Birth: enter the current date.
   Sex: select **Other**.
10. Click on the **Exam** button to finish the registration.
11. Check that the AEC symbol is displayed on the **Examination** task card.

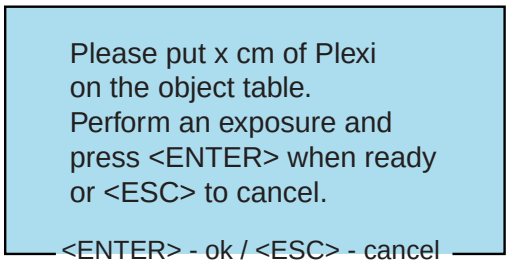
12. Press the keyboard button and click on the **Command Prompt** button in the lower taskbar to switch to the service program.

13. Insert the reference IP cassette in the object table.

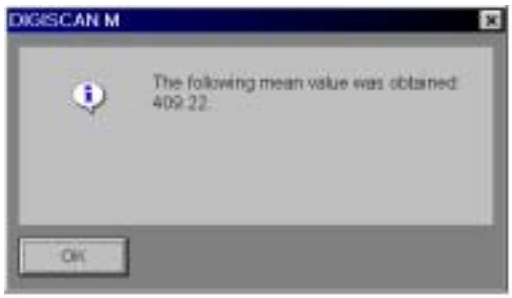
NOTE	**Make sure the new backup floppy is inserted.**

NOTE	**Do not use a compression plate.**

Press F3.



14. Follow the instructions in the message box in the service program for performing an exposure.
15. Press Enter.
16. Press the keyboard button to switch to the **Examination** task card.
17. Read barcode for exposed IP cassette.
18. Read the projection view barcode **L-cc**.
19. Read the IP cassette in the image reader.
20. Register the mean value (AD Value) that is displayed on the screen and press **OK**.



21. If the value differs from 450, switch to the service program, adjust the values in dialog *AEC - Sensitivity correction* (Fig. 3) and save the new Sensitivity correction value with F2. Repeat the procedures described from step 6 to step 20 until the value 450 is reached.
If the value is satisfactory, proceed by pressing F4. Switch to the Examination task card and click on the **End of examination** button to exit the examination.

NOTE	**One adjustment step of sensitivity correction (1/8 E.P.) corresponds to approximately 4 AD Values, i.e.**

$$\frac{450 - x}{4} = y$$

x = obtained mean value

y = suggested adjustment for sensitivity correction

NOTE

It is important to use 450 and the specified AEC calibration plexi (material No. 65 61 224 and 65 61 232) during the procedures under “Calibrate correction tables”, since measurements are relative to factory results at 450.
The AD Value preferred by the customer can be adjusted later either in Sensitivity correction or Sensitivity.

22. Press the keyboard button and click on the **Command Prompt** button in the lower taskbar to switch to the service program.

23. Take another IP cassette than the reference IP cassette. Since it will not be developed, the IP cassette can be used for all exposures during the following calibration.

NOTE

Using secondary erasure, erase the used IP cassette after the fourth exposure, otherwise the IP cassette cannot be utilized for one day.

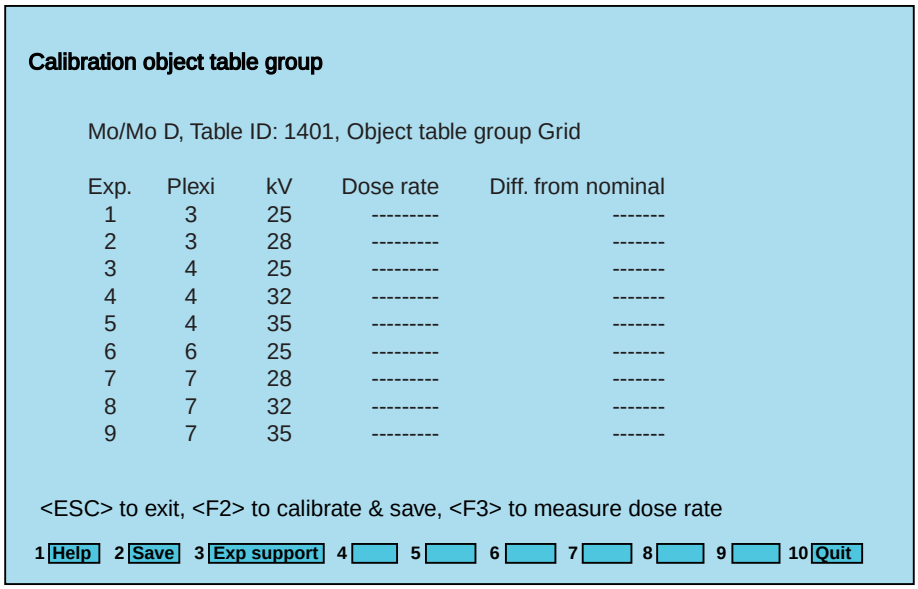
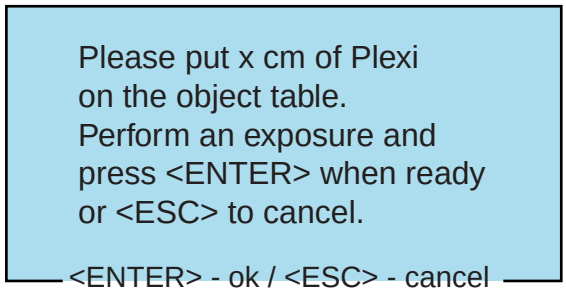

Calibration object table group
Mo/Mo D, Table ID: 1401, Object table group Grid
Exp. Plexi kV Dose rate Diff. from nominal
1 3 25 --------- -------
2 3 28 --------- -------
3 4 25 --------- -------
4 4 32 --------- -------
5 4 35 --------- -------
6 6 25 --------- -------
7 7 28 --------- -------
8 7 32 --------- -------
9 7 35 --------- -------
<ESC> to exit, <F2> to calibrate & save, <F3> to measure dose rate
1 Help 2 Save 3 Exp support 4 5 6 7 8 9 10 Quit
MAM00885

Fig. 4 Dialog *Calibration object table group* shows the dose rates for a number of exposures. The dashed lines below Dose rate indicate that no exposures have been performed yet.

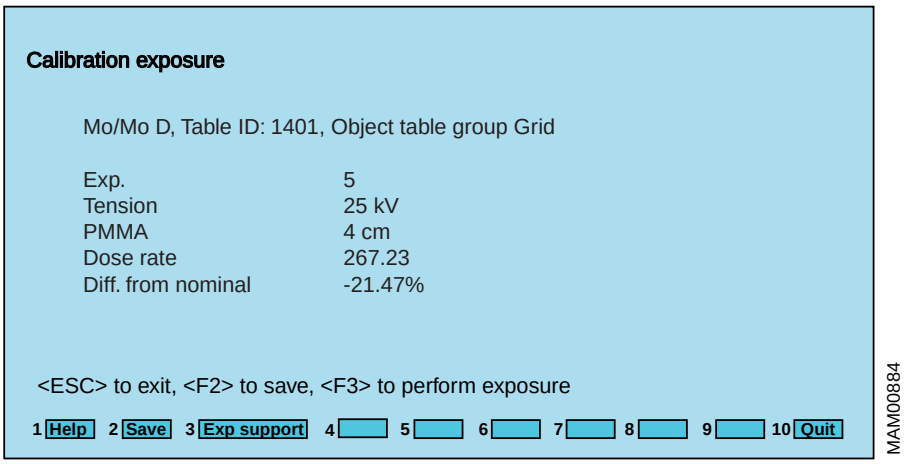
24. To proceed with the calibration, place the cursor by one of the alternatives. Press F3.



25. Follow the instructions in the message box shown.

NOTE	**Do not use 2 × 1 cm plexi plates instead of a 2 cm plate.**

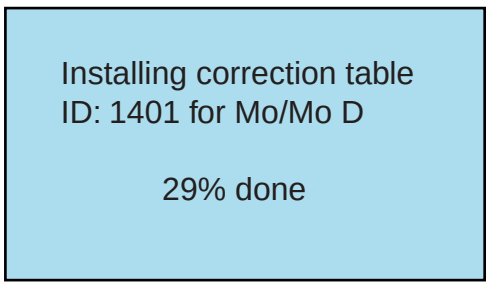
26. When the exposure is done, the dialog *Calibration exposure* appears with values for Dose rate and Diff. from nominal.


Calibration exposure
Mo/Mo D, Table ID: 1401, Object table group Grid
Exp. 5
Tension 25 kV
PMMA 4 cm
Dose rate 267.23
Diff. from nominal -21.47%
<ESC> to exit, <F2> to save, <F3> to perform exposure
1 Help 2 Save 3 Exp support 4 5 6 7 8 9 10 Quit
MAM00884

NOTE	**If the Diff. from nominal exceeds ±50% ensure that the exposure really has taken place, the thickness of AEC calibration plexi (material No. 65 61 224 and 65 61 232) is correct and properly positioned and that the cassette (loaded with IP) is inserted and repeat the last exposure. If the difference still exceeds ±50% accept the value and proceed.**

27. Save the values with F2.
28. Repeat steps 24 to 27 until all exposures are done.
29. Perform a primary erasure of the IP cassette according to Fuji Operating Manual FCR5000MA plus.
30. When all exposures for one object table group are done, save the values with F2 in the dialog *Calibration object table group*.
31. The dialog *Calibration AEC correction table* appears. Select the next object table group and repeat steps 5 to 31.

32. When all desired object table groups are calibrated, press F2 to install the calibrated correction table in the AEC.



33. The dialog *AEC correction tables* appears. Repeat from step 2 until all available Anode/ Filter combinations are calibrated.

Recalibration of an object table

An already calibrated object table group can be recalibrated.

NOTE	**Make sure the new backup floppy is inserted.**

1. Repeat the procedure described in steps 1 to 4, Page 7 - 13.
2. To recalibrate a correction table for an object table group, place the cursor in front of the group. Press F4. This will reset the existing calibration of the chosen object table group and replace it with the original correction table stored on the floppy.
3. Press F2 to save.
4. Recalibrate the desired object table group according to the normal procedure, from step 2, Page 7 - 13.

Sensitivity correction (fine setting)

NOTE	**New backup floppy must be inserted. The specified AEC calibration plexi (material No. 65 61 224 and 65 61 232) must be used.**

When all desired object table groups are calibrated, a fine setting of the sensitivity correction should be performed for all available object tables.

AEC - Sensitivity correction

	H			D		
	Mo/Mo	Mo/Rh	W/Rh	Mo/Mo	Mo/Rh	W/Rh
Grid 18x24	0	0	0	0	0	0
Grid 24x30	0	0	0	0	0	0
No grid 18x24	0	0	0	0	0	0
No grid 24x30	0	0	0	0	0	0
Magnification 1.5	0	0	0	0	0	0
Magnification 1.8	0	0	0	0	0	0
Stereo	0	0	0	0	0	0

valid entries from -120 to 120 in 1/8 E.P. (+/-15 E.P.)

<ESC> to exit, <TAB> move to next entry field, <F2> to save, <F3> exp support

1 Help 2 Save 3 Exp support 4 5 6 7 8 9 10 Quit

Fig. 5 Set the sensitivity correction for all desired object tables.

1. In **Mainmenu** select **Configuration > AEC > Sensitivity correction**.
2. Press the keyboard button to switch to the **Examination** task card.
3. Select **Options > Service > Local Service** in the window menu header.

4. Enter the service key (6 characters in 2nd mask).

5. Confirm the screen with **OK**. The Service Home menu appears.

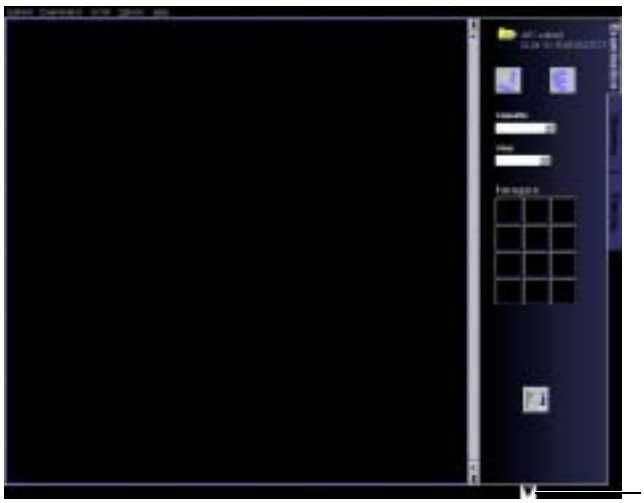
6. Select **Quality Assurance**.

7. In **Source** select **AEC Calibration**.
8. In **AEC Calibration** select **Enable calibration mode**.
9. Select **Go** in the action bar.

10. Minimize the Quality Assurance window.
11. Click on the **Patient Registration** button and register a patient with the following entries:

Last name: enter the name “AEC patient”.
Date of Birth: enter the current date.
Sex: select **Other**.

12. Click on the **Exam** button to finish the registration.

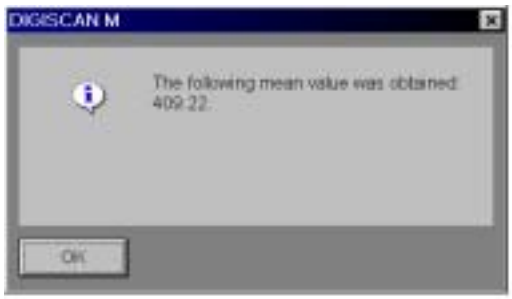


13. Install an object table.
14. Insert the reference IP cassette in the object table.
15. Press the keyboard button and click on the **Command Prompt** button in the lower taskbar to switch to the service program.
16. Select F3 for support and perform an exposure.

NOTE	**From this point forward a compression plate may be used.**

17. Press Enter.
18. Press the keyboard button to switch to the **Examination** task card.
19. Read barcode for exposed IP cassette.
20. Read the projection view barcode **L-cc**.
21. Read the IP cassette in the image reader.

22. Register the mean value (AD Value) that is displayed on the screen and press **OK**.



23. The AD value should be as close to 400 (factory recommended value) or as close to customer preferred value as possible. One adjustment step of sensitivity correction (1/8 E.P.) corresponds to approximately 4 AD Values. If the value is more than 4 AD Values from the preferred value, switch to the service program and adjust the values in dialog *AEC - Sensitivity correction* (Fig. 5). Save with F2. Switch to the **Examination** task card and click on the **End of examination** button to exit the examination. Repeat the procedure described in steps 2 to 22.

NOTE

One adjustment step of sensitivity correction (1/8 E.P.) corresponds to approximately 4 AD Values, i.e.

$$\frac{400(\text{or customer preferred}) - x}{4} = y$$

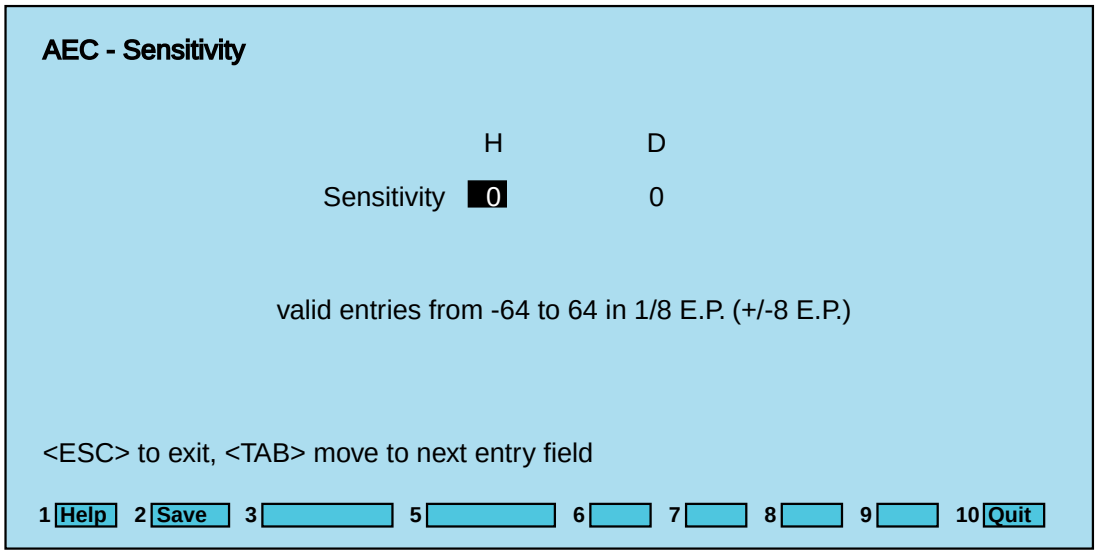
x = obtained mean value

y = suggested adjustment for sensitivity correction

24. Repeat this procedure for the other object tables if applicable.

Sensitivity

Adjustment of AD Value for the whole AEC is performed under **Mainmenu > Configuration > AEC > Sensitivity**.



NOTE	**The AD Value preferred by the customer can be set with this function. The customer's own phantom(s) can also be used.**

Testing the AEC-function

AEC performance test

Testing of the AEC-function is to be performed according to the test protocol, and for the object tables in question. (Should error codes Er013 or Er450 appear; change to AEC calibration plexi (material No. 65 61 224 and 65 61 232) which is 1 cm thinner.)

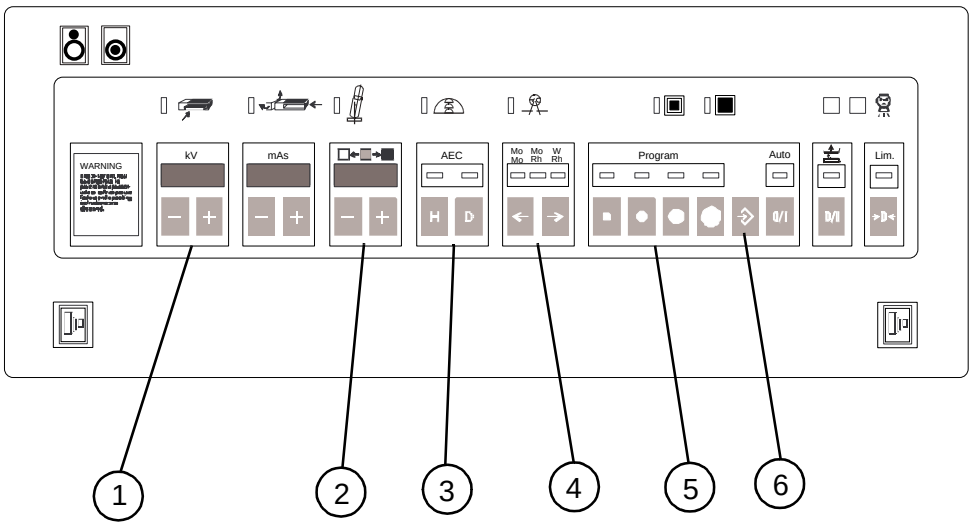
NOTE	**Tolerance only valid for IP/cassette combinations listed in Table 1 under "General" on Page 7 - 1.**

NOTE	**Use the AEC calibration mode.**

Reinstall/Install program parameters for OPDOSE

NOTE **If OPDOSE shall be used for the IP cassettes, the following steps must be done.**

1. If the system is ON and the service program is running, go to step 4, else go to step 2.
2. System ON.
3. Start up the service program.
4. In **Mainmenu** select **Configuration > Miscellaneous > Panel programming**. The panel program switch must be ON. Save with F2.
5. In **Mainmenu** select **Configuration > Miscellaneous > Auto limits**. Make sure the values are Program 1 30 mm, Program 2 45 mm and Program 3 60 mm or the values desired by the customer. Change if needed and then save with F2.
6. Set kV (1/Fig. 6), density (2/Fig. 6), H/D (3/Fig. 6) and anode/filter combination (4/Fig. 6), for one of the programs according to the test values previously noted in the protocol, except density correction which should be set to 0.
7. Save the program parameters if needed by pressing the store button (6/Fig. 6) and then the program button (5/Fig. 6). Keep both buttons pressed until the program button stops flashing (approx. 5 s). Repeat the procedure in step 5 to 6 for the remaining programs.



MAM00018

Fig. 6

Factory settings

Changes can be made with the service program (Configuration, Miscellaneous, Auto limits).

Thickness	kV	Anode/filter combination
≥ 61 mm	26	W / Rh
46 - 60 mm	27	Mo / Rh
31 - 45 mm	27	Mo / Mo
0 - 30 mm	26	Mo / Mo

Fig. 7 Installations with filter disc Mo 0.030 / Rh 0.025 / Rh 0.050

Thickness	kV	Anode/filter combination
≥ 61 mm	28	Mo / Rh
46 - 60 mm	27	Mo / Rh
31 - 45 mm	27	Mo / Mo
0 - 30 mm	26	Mo / Mo

Fig. 8 Installations with filter disc Mo 0.030 / Rh 0.025

Testing OPDOSE

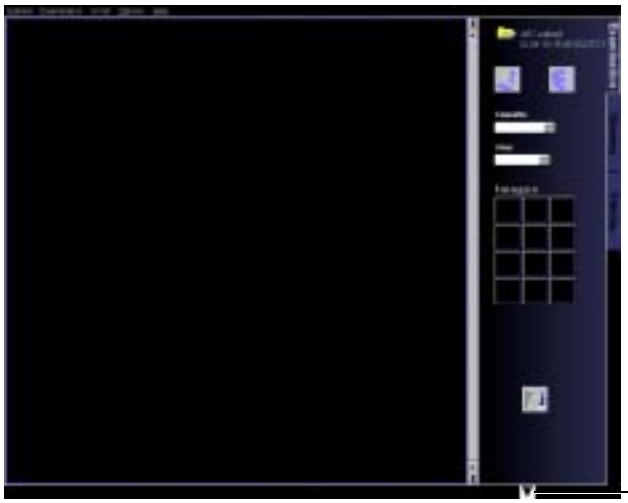
1. If the system is ON and the service program is running, go to step 11, else go to step 2.
2. System ON.
3. Select **Options > Service > Local Service** in the window menu header.

4. Enter the service key (6 characters in 2nd mask).
5. Confirm the screen with **OK**. The Service Home menu appears.

6. Select **Quality Assurance**.

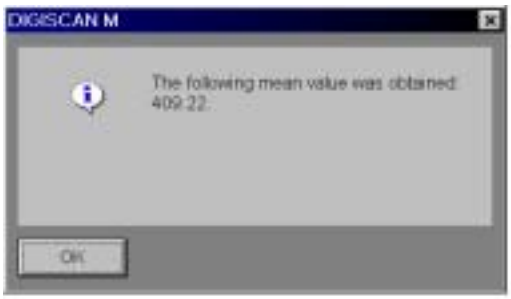
7. In **Source** select **AEC Calibration**.
8. In **AEC Calibration** select **Enable calibration mode**.
9. Select **Go** in the action bar.

10. Minimize the Quality Assurance window.
11. Click on the **Patient Registration** button and register a patient with the following entries:
    Last name: enter the name “AEC patient”.
    Date of Birth: enter the current date.
    Sex: select **Other**.
12. Click on the **Exam** button to finish the registration.



13. Start up the service program.
14. Mount an 18x24 cm compression plate to the MAMMOMAT 3000.
15. Select a thickness of AEC calibration plexi (material No. 65 61 224 and 65 61 232), that is within the thickness interval of the program to be tested. The thickness intervals can be found in **Mainmenu > Configuration > Miscellaneous > Auto limits**. For more information about Auto limits, see Chapter “Miscellaneous -> Auto limits” in the service manual “Service Program” for MAMMOMAT 3000.
16. Select AUTO on control panel.

17. Place the AEC calibration plexi on the object table in question and compress to 6 kg or more.
18. Check that the correct program is blinking on the control panel. Select the program by pressing the corresponding program button on the control panel.
19. Make exposure.
20. Press the keyboard button to switch to the **Examination** task card.
21. Read barcode for exposed IP cassette.
22. Read the projection view barcode **L-cc**.
23. Read the IP cassette in the image reader.
24. Register the mean value (AD Value) that is displayed on the screen and press **OK**.

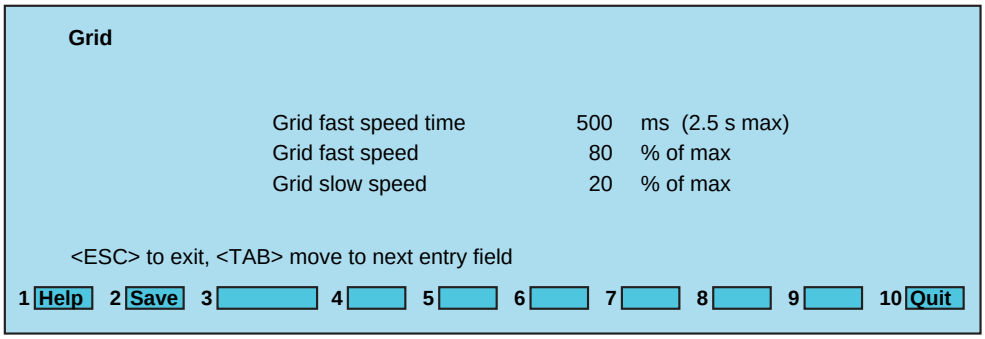


25. The AD Value shall be as close to 400 as possible (or the density preferred by customer). If necessary adjust density correction on control panel. Save by pressing the store button and then the program button. Keep both buttons pressed until the program button stops flashing.
26. Repeat the procedure described in steps 15 to 25 for the other used programs.
27. Note the OPDOSE settings in the attached test protocol.
28. Switch to the **Examination** task card and click on the **End of examination** button to exit the examination.

Final procedures

1. Quit the service program if it is running.
2. Make sure the ***new backup floppy*** is inserted, marked with serial number of system and version of the correction tables (can be found on the AEC floppy disk with material No. 66 01 897).
3. In the DOS prompt, type:
   “C:\mammomat” and then start the service program from A:.
4. Activate the DLF switch. In **Main menu** select **Configuration > Miscellaneous > DLF switch**, press space to set switch to ON. Press F2 to save.
5. In **Mainmenu** select **Configuration > Miscellaneous > Cassette loaded check**. Set to ON.

6. Reduce the grid speed. In **Main menu** select **Configuration > Grid speed**. Set the following values:


Grid
Grid fast speed time 500 ms (2.5 s max)
Grid fast speed 80 % of max
Grid slow speed 20 % of max
<ESC> to exit, <TAB> move to next entry field
1 Help 2 Save 3 4 5 6 7 8 9 10 Quit
MAM00762

7. In **Main menu** select **Service > Copy error buffer to file**.
8. Take the backup to hard disk: **Backup > Copy installation area to disk > All**.
9. In **Mainmenu** select **Configuration > Save config file**. Press F2 to save.
10. In **Mainmenu** select **Service > Delete error buffer**. Press y to delete.
11. Quit the service program by pressing F10.
12. Type “C:”.
13. Type “COPY *.TXT A:”.
14. Check that the following backup files are stored on the floppy disk (by typing “dir a:”, then pressing Enter):

    - a_backup.txt for AEC parameters
    - s_backup.txt for stand parameters
    - p_backup.txt for panel parameters
    - momo_h.txt for AEC correction tables
    - morh_h.txt for AEC correction tables
    - wrh_h.txt for AEC correction tables
    - momo_d.txt for AEC correction tables
    - morh_d.txt for AEC correction tables
    - wrh_d.txt for AEC correction tables
    - mammo.cfg for configuration parameters
    - errorbuf.txt for error log
15. Type “DEL *.TXT”.
16. Type “CD..”.
17. Type “RMDIR mammomat”.
18. Mains voltage and system OFF.

NOTE

Keep all floppy disks in the plastic folder (material No. 61 62 411), which is included in the upgrade kit, with other documentation for the MAMMOMAT in question.

Image quality test procedure

Perform the AEC accuracy test and the AEC reproducibility test in the DIGISCAN M Quality Control Manual, SPB7-420.210.01... and fill out the Test report protocol accordingly.

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Safety measurements

Components which can be detached from the mains cable

Procedure for acquisition workstation, SIMOMED monitor (option) and MOD drive (option).

- Using the protective ground wire tester, measure the resistance between the protective ground terminal of the equipment and all metallic parts of the equipment (including LCD monitor for acquisition workstation) which the patient/operator may come in contact with. The protective ground resistance must not exceed 0.1 Ω (observe local regulations).
- Measure the resistance between the ground connections of the mains cable ends. The protective ground resistance must not exceed 0.1 Ω (observe local regulations).

Components which can not be detached from the mains cable

Procedure for image reader.

- Using the protective ground wire tester, measure the resistance between the ground connection of the mains cable end and all metallic parts of the equipment which the patient/operator may come in contact with. The protective ground resistance must not exceed 0.2 Ω (observe local regulations).

Remaining work steps

- Wipe down the system with a moistened cloth.
- Check all protocols for completeness.
- Carry out a Remote Session with your responsible uptime service center (USC).

  ➪ Have the telephone number ready and give it to the service specialist.
- Establish any integration into the existing network.
- Unpack any cassettes still in the box and load them with the appropriate IPs, use the cotton gloves!

NOTE	**Insert the IP into the cassette being extremely careful with the front and rear sides of the double-face IP, see DIGISCAN M Instructions for use, SPB7-420.201.01... .**

- Fill in the IVK list or report the IVK components to your responsible uptime service center (USC).

Completing the protocol

- Make sure the "Start-up protocol" on Page 11 - 1 is completed.

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The checks and measurements that have been carried out and documented up to this point are intended to assure that the system technically functions correctly.

However to satisfy the customer, the system must be adapted to the medical application and to the on-site working conditions.

For this, it is necessary to bring in an applications specialist who:

- Optimizes the system image quality.
- Programs the function key and software keys on the MagicView 1000 (option) if requested by the customer.
- Provides the customer with intensive instruction on how to operate the system.

If it is not possible to have an applications specialist on site immediately after system startup has been completed, the responsible system technician can also provide the customer with brief instructions on how to operate the system.

In addition, the system technician should remain present for the first several hours to observe patient operation to be on hand to answer the customer's questions; make the customer aware of any mistakes in operation.

After system optimization by the application specialist, the system technician must again carry out a data backup of the complete system configuration to assure that the customer-specific data are saved.

NOTE	**Verify data backup, final work steps with date and signature in the Start-up protocol.**

Applicable for Germany:
A radiographic system can be put into patient operation only if a system turnover procedure per §16 RöV has been carried out.

It is recommended that the responsible system technician be on hand to provide support to the person responsible for system turnover.

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DIGISCAN M Serial number.....

MAMMOMAT Serial number .....

Name of installer .....

Installation date .....

Backup of existing system

Use these two protocols with the instructions in "Preparation" on Page 7 - 4 and onward.

Anode	Power (kW)
Large focus Mo	
Large focus W	
Small focus Mo	
Small focus W	

The customer's own OPDOSE settings:

Program buttons	kV	Density correction	speed button H	anode/filter combination	Breast thickness

AEC performance test

To be performed for the object tables, wings, and speeds in question.

*Should error codes Er013 or Er450 appear; change to AEC calibration plexi which is 1 cm thinner.

	IP		Cassette	
	Manufacturer	Type	Manufacturer	Type
H				
D				

Wing 1 M3000, Wing 2 M1000

For applicable anode/filter combinations.

Grid Table 18x24 (Bucky)		mAs	AD Value
Mo/Mo	25 kV, 6 cm plexi*		
Mo/Mo	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Grid Table 18x24 (Bucky)		mAs	AD Value
Mo/Rh	26 kV, 6 cm plexi*		
Mo/Rh	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Grid Table 18x24 (Bucky)		mAs	AD Value
W/Rh	25 kV, 6 cm plexi*		
W/Rh	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Magnification Table		mAs	AD Value
Mo/Mo	25 kV, 6 cm plexi*		
Mo/Mo	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Magnification Table		mAs	AD Value
Mo/Rh	26 kV, 6 cm plexi*		
Mo/Rh	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Magnification Table		mAs	AD Value
W/Rh	25 kV, 6 cm plexi*		
W/Rh	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

Wing 2 M3000

Grid Table 18x24 (Bucky)		mAs	AD Value
Mo/Mo	25 kV, 6 cm plexi*		
Mo/Mo	32 kV, 2 cm plexi		

Tolerances: 400±32 (factory recommended value)

or customer preferred value±32

OPDOSE settings

Use this protocol with the instructions in "Testing OPDOSE" on Page 7 - 29.

	kV	Density correction	Speed button (H or D)	Anode/filter combination	Breast thickness	AD Value

Final checks

Ground wire resistance for the complete system measured per ARTD 2

Protective earth terminal to enclosure, max 0.1 Ω: ☐
(Acquisition workstation, SIMOMED monitor (option), MOD drive (option))

Protective earth wire resistance, max. 0.1 Ω: ☐
(Detachable cables)

Plug protective earthe terminal to enclosure, max 0.2 Ω: ☐
(Image reader)

Visual and function checks carried out: ☐

Image quality test carried out: ☐

All protocols filled out: ☐

Remote Session carried out: ☐

Backup data saved ☐
(applies only for integration into an existing net)

Backup data saved - customer-specific ☐
(after application)

Date: _____ Technician / Name: _____

Signature: _____

Date: _____ Technician / Name: _____
(Application backup)

Signature: _____

NOTE **File a copy in Register 9 of the System Manual "Certificates" at the corresponding site.**

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Page	Chapter	Change
1-1	Documents required	DIGISCAN M Hardcopy Camera Information is added.
1-2	Tools, meters and appliances required	AEC calibration plexi kit is removed.
1-3	Prerequisites	Step 3 is rewritten.
1-4	Software	Text change.
2-4	Configuration of the barcode scanner	Barcode picture in step 2 replaced
2-5	Configuration of the barcode scanner	Step 11,12,13 and 14 removed from previous version.
2-6	Configuration of the barcode scanner	Step 15,16 and 17 removed from previous version Second bullet point (testing the barcode scanner) removed.
3-4	Setting the configuration	Fourth step is new Fifth step is new
3-5	Setting the configuration	Text changed in point 1 (Replace the IP address of the CPU90F....) The word length was corrected.
3-6	Setting the configuration	"↵" is added to point 8.
3-9	Check HOSTS file	Text is new
4-1	Start-up of the viewing station (option)	MammoReport^{Plus} is added.
5-1	Recommended hardcopy camera	Text change.
6-1	Image transfer	Second step is new.
6-2	Function check of the acquisition workstation	Second step is rewritten
6-3	Function check of the acquisition workstation	Second step has (option) added to it. Warning is new. First step below figure is new.
6-4	Function check of the viewing station (option)	MammoReport^{Plus} is added.

Page	Chapter	Change
7-4	Preparation	Steps 2 and 6 are rewritten. Steps 12, 13 and 14 in previous version is removed. Step 12 is rewritten. Picture replaced in step 12. Picture replaced in step 14.
7-5	Preparation	Step 21 is rewritten. Steps 26, 27, 28 and 29 in previous version are removed.
7-6	Backup of existing system	Steps 6, 7, 8 and 9 in previous version are removed.
7-7	Backup of existing system	Step 22 in previous version is removed.
7-8	Calibration conditions	Text is new.
7-16	Calibrate correction tables	Second note in step 13 is new.
7-17	Calibrate correction tables	Note in step 23 is new.
7-18	Calibrate correction tables	Second note is rewritten.
7-21	Sensitivity correction (fine setting)	Step 3 is rewritten. Picture replaced in step 3.
7-22	Sensitivity correction (fine setting)	Picture replaced in step 5.
7-23	Sensitivity correction (fine setting)	Note in step 16 is new.
7-24	Sensitivity correction (fine setting)	Step 23 is rewritten (400 is factory recommended value).
7-26	AEC performance test	Second note is new.
7-29	Testing OPDOSE	Step 3 is rewritten. Picture in step 3 is replaced. Picture in step 5 is replaced.
7-31	Final procedures	Steps 1, 2 and 3 are rewritten.
7-32	Final procedures	Steps 7, 8 and 10 are rewritten.
8-1	Image quality test procedure	Text is rewritten.
11-2	Wing 1 M3000, Wing 2 M1000	Tolerances are rewritten.
11-3	Wing 2 M3000	Tolerance is rewritten.